- - - Index to CONTENTS, August, 1934 - - -

Accident Prevention
Play in a Safe Place 13

Airports
Construction under the CWA Program 9

Bathing Places
Standards for Bacterial Quality of Water at Natural Bathing Places 51

Bridges
Grand Central Parkway Approach to New York City's Triborough Bridge 43

Century of Progress
Foreign Villages Draw Crowds 75

City Manager Plan
Recent City Manager Appointments 75

Civic and Commercial Organizations
Chamber of Commerce Has Credit for First Completed PWA Housing Project 44

Civil Works Administration
Airport Construction under the CWA 9
Refuse Incinerator Built as CWA Project 56

Conventions
When and Where 83

County Government
Arlington County Pioneers Again 71

Did You Read the July Issue?
Important Topics Covered 15

Finance and Taxation
Federal Municipal Debt Adjustment Act .. 5
High Values for High Taxes 47
Excessive "Economy" Is Extravagance 61
The Municipal Bond Market 63
Tax-Collecting Plans by Installment 69

Forward Steps
Items Contributed by Officials 60

Government and Administration
From the Institute of Public Affairs 58
Cities Try Municipal Gasoline Business ... 69
Practical Training for Public Service 71
Origin of State "Improvement Authority" Idea 75

Health and Sanitation
Standards for Bacterial Quality of Water at Natural Bathing Places 51

Housing
First Completed Housing Project 44
Milwaukee's Plan for Condemnation of Buildings 61
Low-Cost Housing Exhibit in Preparation .. 61
Getting Rid of Unfit Buildings 62
Demolition in Atlantic City 63
Government Urged Not to Finance Reconditioning in Slum Areas 63
PWA Housing Division Distinct from Federal Housing Administration 73
Executive Director of NAHO 73
Pan-American Housing Conference 73
To Stimulate Legislation and Action in Public Housing 75

Improving Municipal Administration
Items from Public Administration Clearing House 69

Insurance
Economizing on Municipal Insurance 75

Law, Municipal, and Legal Decisions
American Bar Association to Discuss Municipal Law 75
The City's Legal Rights and Duties 79

Motor Equipment
New Garbage Collection Vehicle 85

National Recovery Administration
NRA Codes Modified for Cities 69

News and Illustrations
Hints for Officials 85

Outdoor Lighting
Business Districts Then and Now 91
Modern Street-Lighting Design 93
Controlling Hollywood's Lamps 93
Built and Operated to Scale 93

Parks, Parkways and Recreation
Play in a Safe Place 13
Grand Central Parkway Approach to New York City's Triborough Bridge 43
Beauty-Spots in a South Jersey Park 60
A New Safety Seat for Swings 85
A One-Hand Power Lawn Mower 87

Planning and Zoning
Regional Planning and Sewage Disposal ... 39
Approach to New York's Triborough Bridge 43
Store-Building to Meet the Need 71
National Resources Board 73
Zoning and Planning Notes 77
A New Name for City Planning 77

Police
Improving Police Methods 13
Preventing False Alarms on the Fourth ... 13

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Posters
From National Safety Council 13

Power Plants
Underfeed Stokers Solve Boiler-Feed Problems 45

Publications
New Books and Pamphlets 81

Public Utilities
The Cincinnati Electric Rate Settlement ... 42
$100,000 to National Power Policy Committee 55
Cities and Utilities 69

Public Works Administration
RFC Moneys May Aid Depleted PWA Funds 5
Funds Allocated to 1,300 Projects in Two Weeks 5
Contractors Authorized to Cut Prices 15 Per Cent to Governmental Agencies 5
First Completed Housing Project 44
Colonel Waite Leaves PWA for Cincinnati's Department of Economic Security 75

Sewers and Sewage Disposal
Milwaukee Sewage Treatment Plant 11
Why Do Some Sewage Treatment Plants Fail? 11
Regional Planning and Sewage Disposal 39
Corrugated Pipe Sewer Carried over Ravine 48
$600,000,000 of Sewer and Water Projects. 57
Vitrified Clay Liner Plates for Concrete Sewers 87
New Lubricated Plug Valves 89

Smoke Nuisance
Why Does Coal Smoke? And What Does Smoke Cost? 57

Snow Removal and Street Cleaning
Street Cleaning Costs in Colorado 9
Snow Removal in Cities—Time Keeping for Temporary Labor 49

Streets and Highways
Relaying Brick Streets in Omaha 9
Highway Maintenance in Cincinnati 9
Street Department Costs in Colorado 9
Relaying Salvaged Brick in Lancaster 40
Let Traffic Determine Your Concrete Road Design 41
Rolling Bituminous Surfaces 44
Stabilizing Weak Subgrades 54

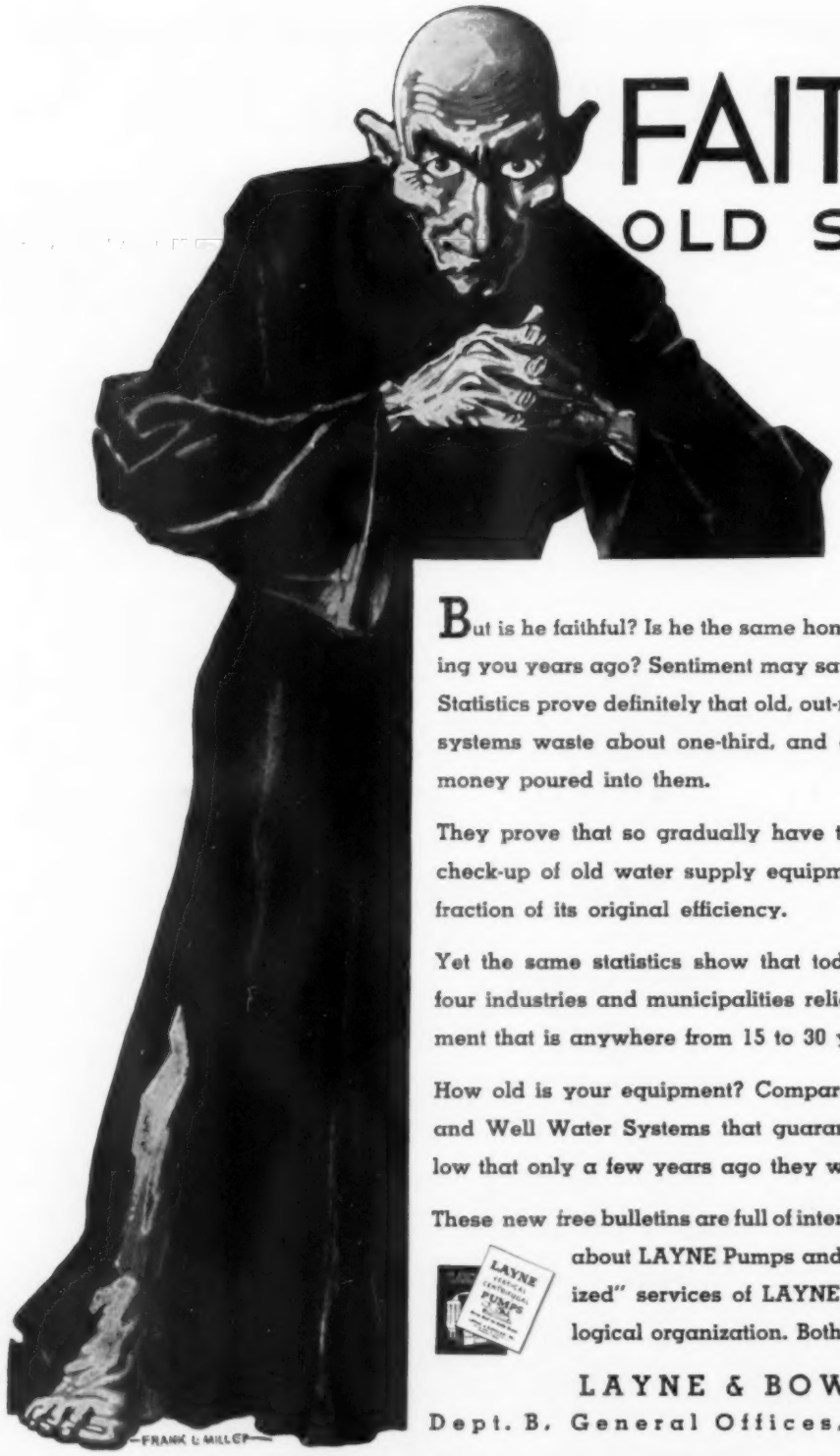
Traffic Control and Facilitation
Traffic Law Enforcement by Courtesy 13
Slow at Blind Corners 13
Red Lights for Bicycles 13
A New Development in Signal Timing 64
Firemen and Traffic 65

Waste
Refuse Incinerator as CWA Project 56
New Type of Garbage Collection Vehicle .. 85

Water Supply and Water Works
Training Filter Operators at the University of Iowa 7
Accounting for Water at Holland, Mich ... 7
Water Consumption and Extension of Mains, Glens Falls, N. Y. 7
Overcoming Shortage, Great Britain 7
Softened Fresh Water Supply, Bermuda ... 7
Modernizing a Water Distribution System. 46
Improvements in the Water Utility of Orrville, Ohio 53
$600,000,000 of Water and Sewer Projects. 57
Rates, Service and Installation Charges, Hydrant Rentals, Sprinkler Costs—IV .. 66
Effective Hypo-chlorinator for Water Works 85
Altitude Controller for Water Works and Sewage Systems 87
Vertical Centrifugal Pumps for Economical Pumping of Water 89

See pages 17, 18, 81 for notices of catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 102



FAITHFUL OLD SERVANT

But is he faithful? Is he the same honest, hard worker who began serving you years ago? Sentiment may say "Yes," but statistics say—"No." Statistics prove definitely that old, out-moded and obsolete water supply systems waste about one-third, and often more than one-third of the money poured into them.

They prove that so gradually have time and wear taken their toll a check-up of old water supply equipment will show it to have only a fraction of its original efficiency.

Yet the same statistics show that today approximately one in every four industries and municipalities relies for its water supply on equipment that is anywhere from 15 to 30 years old.

How old is your equipment? Compare it with modern LAYNE Pumps and Well Water Systems that guarantee high production at costs so low that only a few years ago they were believed to be unattainable.

These new free bulletins are full of interesting facts you will want to know about LAYNE Pumps and Wells, especially about the "unitized" services of LAYNE'S distinctive, world-wide hydrological organization. Both bulletins sent free upon request.

LAYNE & BOWLER, INC.
Dept. B, General Offices, Memphis, Tennessee

LAYNE PUMPS
AND WELL WATER SYSTEMS

Public Works and Public Finance

RFC Moneys May Aid Depleted PWA Funds

ANNOUNCING on July 16 the virtual depletion not only of the original $3,300,000,000 PWA fund, but also the allocation of most of the $400,000,000 allotted to public works by the President under the recent deficiency act, Administrator Ickes stated his hope of securing additional funds from the Reconstruction Finance Corporation in exchange for securities now held by the Public Works Administration.

Under the deficiency act approved June 19, 1934, the RFC is authorized to purchase marketable securities from PWA not to exceed $250,000,000 at any one time. The money thus derived would be available to PWA for making additional loans, *but not grants*, under the public works title of the National Recovery Act.

Recent reports show nearly 600,000 persons are now employed directly on PWA construction sites. The number employed indirectly in the manufacture of materials, processing and transportation is not known, but it is estimated that for every man employed at the site two others are employed "behind the lines," or indirectly.

The entire program is nearing peak operations in both construction and number of men employed. The trend has been upward for the past several months, with indications that top figures may be reached sometime during August, although the reports on those figures will not be available for some time after the peak is passed.

Cash outlays also are increasing each week. As new work opens up and progress continues on projects already under way, the real expenditures are running above $30,000,000 a week. By "real expenditures" is meant the value of materials put in place on construction sites plus the wages of men employed directly on construction sites.

Funds Allocated to 1,300 Projects in Two Weeks

IN a "Radio Forum" talk, broadcast by NBC on July 11, outlining the then status of PWA funds, Administrator Ickes said in part:

"Within a week of its adjournment, the Congress, at its last session, passed the Emergency Appropriation Bill which gave the President the right to allocate to public works a sum not to exceed $500,000,000. In the exercise of this authority the President, before leaving Washington on his trip to Hawaii, set aside $400,000,000 for the Public Works Administration. Although an additional $100,000,000 may later be given to us by the President, and while the Reconstruction Finance Corporation may buy some of the state and municipal bonds held in the portfolio of PWA, thus releasing further funds for our program, the distinct possibility is that very little in excess of the $400,000,000 already granted will be available for public works during this second year. Accordingly, we are proceeding on the theory that we will have $400,000,000 to spend, in addition to the $3,300,000,000 originally granted by Congress last year and already spent.

"PWA has started its second year so briskly that it has already virtually exhausted that portion of the new funds available as loans and grants to cities, counties, and other non-Federal bodies. In the past two weeks more than $200,000,000 has been allocated to about 1,300 non-Federal projects.*

"This fast action in getting 1,300 new projects under way almost over night was possible because of careful advance planning. It demonstrates the advantage of such planning. With a total of only $400,000,000 immediately available for new works and huge sums earmarked by Congress or required to continue work on large projects already started, there can be few additional non-Federal loan or grant allotments made. The country might as well realize this situation now. It is inevitable that thousands of applicants are doomed to disappointment. . . .

"The future policy of the United States with respect to public works will be determined in due course by the proper authorities. The record of the first year of PWA has been made. Considering the magnitude and variety of the task, and the lack of precedent to serve as a guide, we are proud of that record."

Contractors Authorized to Cut Prices 15 Per Cent to Governmental Agencies

REGULATIONS governing bids on public contracts have been modified sharply by an Executive order of June 29 to permit all bidders to offer Government agencies prices as much as 15 per cent below the quotations publicly filed by them under the open price provisions of their codes. "Public contracts" includes those awarded by agencies of state, municipal, and other public agencies as well as by the Federal Government.

Application of the order is specifically limited to industries which are code-bound to bid in accord with previously posted prices and it in no way alters other regulations adapting Government purchasing policies to the rules of NRA codes.

The modification order does not authorize the breaking of posted open prices in bidding on private work, code regulations remaining in full control. But, for protection of both the industry and its consumers, the order requires that whenever a firm cuts below its posted price in bidding on Government work, it must, immediately after the bids are opened, file a copy of its bid with the appropriate price-reporting agency. However, the previously posted prices will remain in force until and unless changed by their makers.

Private customers having access to the posted open prices will also have access to the filed bids and will therefore know exactly what prices are being quoted to the Government and, it is expected, will guide their purchasing policies accordingly.

The direct effect sought by the order is to restore, within a reasonable range, the price competition of true sealed bids on all Government work without undoing the beneficial effects of price reporting code requirements. The new rule was instituted to meet the repeated complaints of public purchasing agents who, though directed by law to buy from the lowest bidder, have been insistently confronted with identic bids, set in accordance with previously filed open prices. Many codes have required such a course, with no freedom for bidding firms to depart from the effective price level thus established.

To take care of cases in which the full 15 per cent variation may cause damage to an industry's price structure, the order provides that if complaint is filed, the Administrator for Industrial Recovery may after due investigation and finding of the facts reduce the allowable percentage, but in no case to less than 5 per cent below the posted prices.

A study and report on operation of the new plan is required to be made within 6 months.

—From *The Blue Eagle*, July 2, 1934.

*The Federal Municipal Debt Adjustment Act**

THE new Federal Municipal Debt Adjustment Act is not a cure-all for municipal debt troubles; indeed, proceedings under it should be only a last resort. It is still necessary for the taxing body to formulate a scheme which is fair to the taxpayers and which is deemed fair by the large majority of the creditors. Once such a plan has been worked out and has been generally accepted, proceedings under the new Act can be used to make the agreement binding on a recalcitrant minority obstructing consummation of the plan.

* Up to July 23 these new non-Federal allotments had increased to 1,510, totaling more than $236,000,000.

* See page 81, this issue.

WHY *a Radial-Cone Design* TANK?

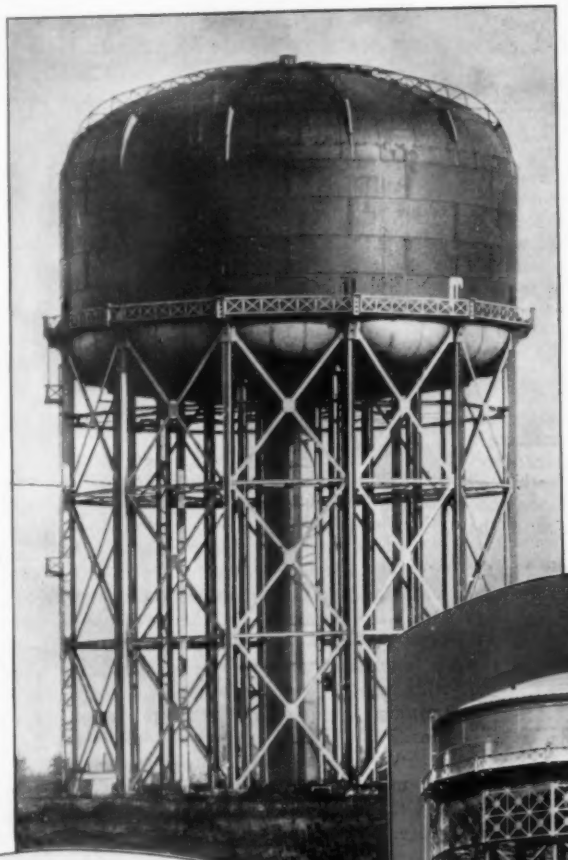
BECAUSE the shallow depth of this design reduces the average head against which the pumps must operate, and thus reduces the cost of operation.

BECAUSE the shallow depth of this design reduces the variation in pressure as the water level in the tank varies, and thus improves the water pressure in the system.

BECAUSE the shallow depth of this design makes it possible to deliver the *entire* tank capacity at serviceable pressure with a lower over-all height than other designs.

BECAUSE the Radial Cone design is sound from a structural as well as from an operating standpoint.

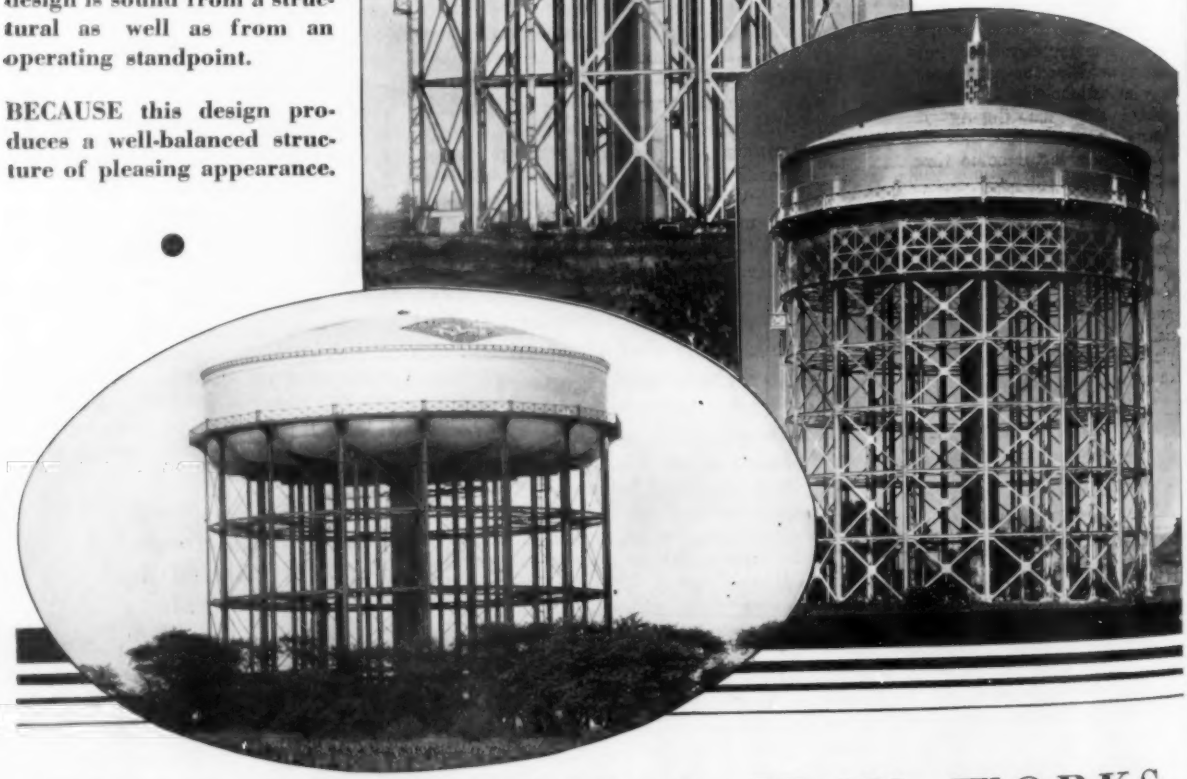
BECAUSE this design produces a well-balanced structure of pleasing appearance.



The illustration at the left shows a 2,000,000-gal. Radial Cone design tank installed at Columbus, Ohio. This structure is 75 ft. to bottom. Almost one-half million gallons of the capacity is contained in the lower 12 ft. of the roof.

The tank illustrated below is a 1,500,000-gal. Radial Cone design at Evanston, Illinois. It is 92 ft. to bottom. Note the pleasing proportions of this structure.

The lower left-hand illustration shows a 1,500,000-gal. Radial Cone tank installed for the Indianapolis Water Company at Indianapolis, Indiana.



CHICAGO BRIDGE & IRON WORKS

Chicago	2127 Old Colony Bldg.	Philadelphia	1616 "1700" Walnut Street Bldg.	San Francisco	1033 Rialto Bldg.
New York	3308-165 Broadway Bldg.	Boston	1501 Consolidated Gas Bldg.	Houston	2919 Main Street
Cleveland	2236 Rockefeller Bldg.	Birmingham	1502 N. Fiftieth Street	Tulsa	1625 Thompson Bldg.
Detroit	1501 Lafayette Bldg.	Dallas	1206 Burt Bldg.	Los Angeles	1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Water Supply and Purification

Training Filter Operators at the University of Iowa

AT the University of Iowa, selected students majoring in sanitary engineering and sanitary chemistry for some years have been given the opportunity to add experience in the practical operation of the filter plants maintained by the Department of Grounds and Buildings to the theoretical and laboratory instruction in water supply and sanitation received in the course of their regular university work.

These selected men have been placed in charge first of the two small filter plants of the swimming pools at the Women's Gymnasium and the Library Annex. Later they have been promoted to the control of the million-gallon filter plant of the Field House swimming pool. Finally they become junior and then senior operator at the 1½-million-gallon filter plant which supplies treated river water to the University. In these latter positions, they are in charge of one or the other of the two night shifts. In all this work the operators are under the direct charge of the writer. They are expected to continue their specialization in water supply and sanitation and to do considerably more laboratory control and investigational and experimental work than would be required of most water-plant operators. Records are carefully kept. Consequently, after having gone through this special training, the senior graduate student operator at the University of Iowa water works can truly be said to be an experienced filter-plant operator. He has usually had two years or more of practical work besides his theoretical background.

The Iowa River, from which the University of Iowa takes its raw water supply, is a highly variable and ashy stream. The turbidity varies from 20 to 15,000 parts per million, the alkalinity from 40 to over 300 parts per million and the color and bacterial load are likewise variable. Taste troubles are also encountered. Constant watchfulness is necessary to get acceptable results in treatment. All of this is excellent from the standpoint of the training of the selected men.

The senior graduate student operator who was chosen for duty at Marion, Ky., and is mentioned in the article on this plant which appeared in the July, 1934, issue of THE AMERICAN CITY, was a young man who took his undergraduate work in civil engineering and has since specialized in sanitation. He remained at Marion throughout the initial month of the functioning of the new plant, during the course of which period he instructed a number of candidates in the operation of the equipment. He also supervised the flushing of the mains and the testing of the water of the system for its free chlorine content. He conducted the necessary tests and calibrations of the plant apparatus and determined the scheme of chemical dosage. In addition, he assisted the Superintendent of Water Works in various ways, such as the making of taps. The experience was a useful one for him as an individual and also gave the plant every opportunity to show its efficiency at the start. The services were highly satisfactory to the engineers, to the contractors and to the city, which had agreed that the plant would be placed in initial operation by a skilled operator.

JACK J. HINMAN, JR.,
Associate Professor of Sanitation, University of Iowa.

Accounting for Water at Holland, Mich.

THE total pumpage for 1934 at Holland, Mich., was 439,685,840 gallons, or 39,475,420 gallons less than for 1932. The water used for quenching fires, flushing water mains and sewers, and the backfilling of sewer and water-main trenches is not metered and is therefore necessarily estimated. The following table gives this information in detail and includes water lost by reason of under-registration of meters:

Water Accounted For	*Gallons*
Registered on meters, 87.71 per cent.	385,658,250
Used for flushing sewers (estimated)	5,875,200
Used for street sprinkling (estimated)	6,304,888
Accounted for, 90.48 per cent..	397,838,338
Estimated as used for flushing mains, under-registration of meters, etc., 9.52 per cent	41,847,502
Total water pumped	439,685,840

A. NAUTA,
Superintendent, Board of Public Works.

Water Consumption and Extension of Mains, Glens Falls, N. Y.

THE yearly consumption of water for 1933 in Glens Falls averaged 3,250,000 gallons per day, of which the domestic consumption averaged 2,700,812 gallons per day, and the industrial consumption and manufacturing consumption averaged 560,611 gallons per day. The total per capita daily consumption was 172 gallons, of which 142 gallons may be charged to domestic consumption and 29.5 gallons to industrial, commercial and manufacturing consumption.

The extension of mains during the year consisted of the installation of 760 linear feet of 6-inch sand-spun cast iron pipe and accessories. The total cost was $1,126.10, and the cost per linear foot was 56.65 cents for labor, $1.0145 for materials, a total of $1.581. There were also four gate-valves and one hydrant installed. There was a return to the Department of $108.00 from the state of New York, representing 40 per cent of the labor item at 40 cents per hour, since these were TERA projects.

ERNEST L. H. MEYER,
Superintendent, Water Department.

Overcoming Local Water Shortage in Great Britain

SIR EDWARD HILTON, Health Minister, speaking before the House of Commons on that country's water shortage, said it is caused in part by "the advancing possibilities of civilization, including baths." According to *News-Week*, other causes of the drought include the increasing use of water for industrial purposes, and a rainfall of only 25.9 inches by the end of March, 1934, which is 9.33 inches below the average.

The size of England, its comparatively few rivers, the density of its population and its high industrial development, make the conservation of water a truly national problem. To counteract the shortage, a bill is in Parliament authorizing local officials to tap private lakes and streams and divert water into the temporarily arid Thames Valley, North Wales, Lancashire, Yorkshire and other sections. A rationing system is contemplated which will probably greatly reduce excess use of water and prevent waste.

The Softened Fresh Water Supply of Bermuda

UNTIL 1929 Bermuda's supply of fresh water depended entirely on importations from New York or on rain water collected from the roofs or from specially constructed catchments. This was necessary because no method had been found to collect underground fresh water without salt contamination from the sea water which permeated the coral structure of the islands. Dr. W. D. Turner of Columbia University, New York, who developed the new Bermuda water works, conceived the idea of applying horizontal wells or infiltration galleries for collecting the surface waters. The system produced water free from salt but very hard, owing to percolation through the coral sandstone. This system was therefore supplemented by an extensive Permutit zeolite softening process, and the resultant soft, fresh, clear water is now being produced and distributed throughout the colony in a complete system of Transite asbestos water mains, which are resistant to the serious corrosive conditions existing in these subtropical sea islands.

Water Rates and Service Charges

See page 66 of this issue, and also the May, June and July issues of THE AMERICAN CITY for reports on Water Rates and Service Charges. More than 60 reports on this subject from selected cities will be published in this magazine during 1934.

'INCOR' Makes Better Concrete

by Curing Thoroughly in Limited Time Available on Average Job

1 Swimming pools require dense, watertight concrete. Engineers specified 'Incor' without admixtures for this Stamford, Conn., Yacht Club pool. Job was watertight, ready to use, 24 hours after last concrete was poured.

Service Strength
IN 24 HOURS
Watertight
IN 48 HOURS

CURING, that is, keeping concrete wet, cannot go on indefinitely; it costs money, interferes with use of the structure. The best concrete is that which cures thoroughly in the short time it is kept wet.

'Incor' 24-Hour Cement 'cures' or combines with water 5 times as fast as ordinary, single-burned cement. That is why 'Incor' is service strong in 24 hours—watertight in 48 hours.

By curing thoroughly in the limited time available on the average job, 'Incor'* makes concrete that is stronger, denser, more watertight.

*Reg. U. S. Pat. Off.

2 Built in mid-winter with 'Incor' cement, these settling tanks for Cretona Print & Dye Works, Clifton, N. J., are giving thoroughly watertight service. Concrete heated to 60° produced 24-hour strengths equal to 7 days with ordinary cement.

3 Mill Rock Reservoir, New Haven, Conn., Water Co.; constructed of 'Incor' concrete, without surface treatment or waterproofing compound. Completed in summer, 1931, it hasn't leaked a thimbleful.

4 (*Right*) Wabash Avenue Bridge, Chicago; 'Incor' was used in precast slabs for sidewalk and roadway. Dense, watertight concrete has successfully prevented moisture absorption, assuring continuous balance between bascule leaves and counterweight.

'INCOR' 24-Hour Cement

Airports–Highways–Street Cleaning

Airport Construction Under the CWA Program

CONSTRUCTION is under way at 808 airports and landing fields which are being established or improved under the program undertaken last December by the Department of Commerce and the Civil Works Administration. About 1,400 additional proposed sites have been approved, and local administrators have been given authority to proceed with them as rapidly as possible. Although the Civil Works Administration. About 1,400 to a conclusion, airport work will continue under the sponsorship of individual states as a part of the Federal Government's decentralized work relief plan.

About 60 per cent of the projects now under way are new fields, and many of those which are classed as improvements of existing airports apply to landing facilities which had been abandoned and were not suitable for use by air men. The 808 now under construction include 391 at cities of 5,000 or more population, and 417 at communities of less than 5,000 population.

Additional projects scheduled for development are classified in two groups. The first group consists of 662 airport sites which are either leased or owned by cities and which are especially desirable for aeronautics in general as units in a nation-wide network of airports. These fields will be given preference. They include 201 at cities of 5,000 or more population, and 461 at municipalities of less than 5,000 population. The other group consists of 803 sites which have been examined by airport engineers working with the Commerce Department's state airport advisers, and found to be worthwhile projects.

An auxiliary to the airport development program is air marking of roof tops for guidance of airmen in flight. The name of a town is painted on a prominent roof in large letters, so as to be easily read by airmen in flight, and is accompanied by an arrow pointing to the airport. Between 8,000 and 10,000 towns had been so marked up to May 1.

Relaying Brick Streets in Omaha

THE city of Omaha, Nebr., has relaid several miles of old brick pavement during the past few months, using PWA labor. These pavements had been in use from twenty to forty years, and owing to settlement and failures of the base, had become rough. To a large measure these failures of the base could be attributed to street cuts for water, gas, sewers and other underground services. After removing the brick, the failed sections of the old base were replaced with concrete. The old brick were cleaned by men with hatchets, cleavers, etc., and then stacked along the curb. A mastic cushion was used in relaying the brick. The cushion was a mixture of sand with 3 per cent asphalt and was laid hot. The brick was then relaid with the worn side down, and the joints were filled with asphalt into which was rolled a coating of coarse sand or gravel.

The percentage of additional brick required was about 10 per cent. It is interesting to note that the city of Omaha purchased from the Union Stock Yards Co. some old paving block that had been used in the pens for over thirty years. The bricks were removed by CWA labor and used in relaying the streets, so that no new bricks were required. The salvage value of the old bricks was about $20 per 1,000, which was approximately what they cost over thirty years ago.

Highway Maintenance in Cincinnnati

FACED by drastic cuts in operating funds, the Division of Highway Maintenance, Cincinnati, Ohio, concentrated its efforts on maintenance work, curtailing betterment work, during 1933. Eighty-seven per cent of highway maintenance expenditures was used strictly for maintenance. The heavy spring rains, with the resultant floods, taxed the facilities of the Division. Streets were flooded, sewers were clogged and damaged, all of which conditions were alleviated by long-continued work by maintenance forces. Emergency sandbag levees were erected along certain sections to prevent the cutting of important traffic arteries. The work of cleaning up after the flood, an arduous task, was accomplished largely by the forces of the Maintenance Division.

With the development of the Civil Works Administration, the Division planned, organized and supervised some 37 projects, employing 3,000 men. The largest project, that of grading the municipal airport levee, furnished work for 2,000 men. Some of the most interesting facts recorded in the detailed report of the Division are:

29,695 sq. yds. of streets repaired with sheet asphalt	@	$ .58 a sq. yd.
16,154 sq. yds. of streets repaired with granite	@	1.75 a sq. yd.
516,551 sq. yds. of streets repaired with bituminous concrete	@	.27 a sq. yd.
252,501 lineal ft. of sewers cleaned	@	.08 a lineal ft.
12,725 miles of streets cleaned by machine	@	2.00 a mile
35,485 miles of streets cleaned by beat patrol and broom gang	@	1.35 a mile

C. A. DYKSTRA,
City Manager.

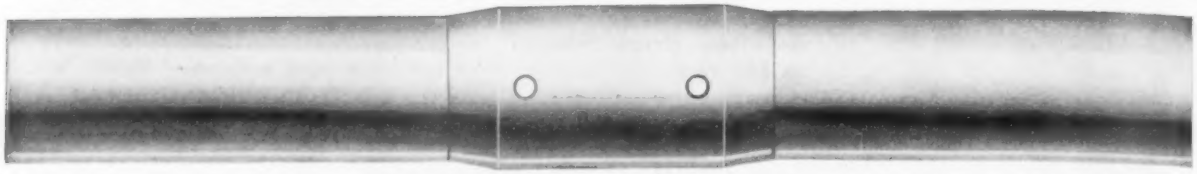
STREET DEPARTMENT COSTS IN COLORADO

Reprinted from Colorado Municipalities

	Miles of Streets	Miles of Pavement	Per Cent Paved	Miles of Sidewalks	Miles of Curb and Gutter	Street Maintenance Cost	Street Cleaning Cost	Total Cost of Cleaning and Maintenance	Total Cost per Street Mile	Per Cent of Total Governmental Cost	Per Capita Cost
Alamosa	20	1.2	6.00	....*	4.2	$ 4,113	$.....†	$ 4,113	$205.65	9.59	$ .81
Aurora	100	2.5	2.50	50	4.25	3,082	.....†	3,082	30.82	20.15	1.34
Boulder	63	15.27	24.24	100	37	24,124	.....†	24,124	382.92	16.05	2.15
Brighton	14	1.6	11.43	11	3	1,663	.....†	1,663	118.79	7.75	.49
Brush	11	2	18.18	12	9	2,335	.....†	2,335	212.27	12.08	1.01
Canon City	40	4	10.00	80	4	12,635	900	13,535	338.38	26.85	2.28
Colorado Springs	144	18	12.50	....*	.....*	69,017	11,892	80,909	561.87	16.25	2.43
Delta	20	.5	2.50	30	4	7,045	389	7,434	371.70	27.33	2.53
Denver	1,030	170	16.50	326§	1,189	556,322	463,625	1,019,947	990.24	9.82	3.54
Durango	18	2	11.11	24	.....*	8,615	.....†	8,615	478.61	9.35	1.60
Englewood	47	3	6.38	20	7	.....*	.....*	.....*	.....*	.....	.....
Florence	15	2	13.33	....*	.....*	.....*	.....*	.....*	.....*	.....	.....
Fort Collins	66	3.37	5.10	40	10	27,220	.....†	27,220	412.42	16.94	2.37
Fort Morgan	26	2	7.69	13	4	8,800	1,200	12,000	461.53	35.59	2.71
Golden	14	7	50.00	20	14	3,700	2,500	6,200	442.85	31.75	2.56
Grand Junction	37.1	19.18	51.70	45	38	10,952	4,722	15,674	422.47	14.83	1.53
Greeley	56.8	6	10.56	42.6	28.4	8,674	4,997	45,380	798.94	31.21	3.72
La Junta	40	1	2.50	50	30	16,490	.....†	16,490	412.25	28.08	2.29
Lamar	33	3	9.09	....*	.....*	12,680	.....†	12,680	384.24	26.96	3.00
Las Animas	25	1	4.00	22	10	1,265	.....†	1,265	50.60	7.37	.50
Leadville	25	.5	2.00	15.5	3.2	3,100	.....†	3,100	124.00	10.34	.82
Littleton	17	1.5	8.82	....*	.....*	3,858	.....†	3,858	226.94	22.49	1.91
Longmont	30	3	10.00	40	6	13,789	2,771	16,560	552.00	21.32	2.75
Loveland	29.5	3.5	11.86	41	7.8	6,215	.....†	6,215	210.67	10.46	1.13
Monte Vista	13	.66	5.08	10.4	5	3,084	816	3,900	300.00	18.33	1.49
Montrose	31.5	1	3.17	26.5	1.5	2,004	471	2,475	78.57	6.70	.69
Pueblo	230	47.02	20.44	....*	.....*	25,532	11,007	36,539	158.87	7.45	.73
Rocky Ford	30	1	3.30	25	10	2,474	1,579	4,053	135.10	7.16	1.18
Salida	30	1.5	5.00	40	6	8,362	4,627	12,989	432.97	28.05	2.56
Sterling	33	3.4	10.30	45	10	6,789	2,000	10,289	311.79	13.57	1.43
Trinidad	85	16	18.82	....*	.....*	28,812	.....†	28,812	338.96	24.17	2.46
Walsenburg	28	4.6	16.42	....*	.....*	5,059	.....†	5,059	180.68	17.47	.92
Averages			12.20						$352.75	17.85	$1.83

* No data available. † Street cleaning cost included in maintenance. § Put in by city.

VIBRATION



WILL NOT LOOSEN IT

RUST

will never have a chance

with

STREAMLINE
TRADE MARK
REG. U.S. PAT. OFFICE
FITTINGS AND COPPER PIPE

Send for Catalog W-3

illustrating the complete line of STREAMLINE Fittings and Copper Pipe — yours for the asking.

THERE are no threaded or flared joints to loosen by vibration in an installation of STREAMLINE Fittings and Copper Pipe.

Vibration is harmlessly dissipated over the entire system and not localized at threaded joints. The connection formed by a STREAMLINE Fitting is a leak, rust and vibration proof bonded joint of pipe, solder and fitting. (Microphotographs prove this beyond a shadow of a doubt). The joint in an installation of STREAMLINE materials instead of being the weakest point is actually the strongest.

Repeated tests run on a 10 ft. length of ¾ in. vertical pipe containing of the patented joints, in which the lower end was held rigid and the upper end attached to a vibrator running continuously, day and night, for one week, showed not the slightest sign of failure at any of the connections. The section of pipe was subjected to 850 vibrations per minute, totalling 8,568,000 vibrations over the week's period. (A severe test this—we believe you'll admit).

Connections made with STREAMLINE Fittings to hard copper pipe have successfully withstood over 16,000,000 vibrations or tests run for aviation fittings. (Standard Aviation fittings fail, as a general thing, at less than 8,000,000 vibrations).

Absence of clogging, rust, and freedom from the harmful effects of vibration are but a few of the many reasons why water works officials who are responsible for the return on a very heavy capital investment, have, in STREAMLINE fittings and copper pipe one of the most effective and low cost forms of insurance that they can adopt.

STREAMLINE
PIPE AND FITTINGS
PORT HURON, CO. MICHIGAN
DIVISION OF MUELLER BRASS CO.

Sewerage and Sewage Disposal

Extension of the Milwaukee Sewage Treatment Plant

THE Milwaukee, Wis., sewage treatment plant, which was first placed in operation in 1925, is now being enlarged at a cost of $2,500,000 to increase its capacity from an average of 85 million gallons daily to an average of 155 million gallons daily, with a maximum of 236 million gallons daily. Twelve aeration tanks are also being added. Upon completion of this work, the plant will have a capacity sufficient to take care of a population of approximately 980,000, about 25 per cent greater than now.

The major units involved in the extension are six sedimentation tanks, each consisting of two chambers, 84 x 161.5 feet, in which sludge-collecting apparatus will be installed, bringing the total to twenty-one, and the twelve new aeration tanks, each 42 feet 9 inches x 370 feet. There will also be the necessary sewage feed and sludge channels and the operating galleries.

The sludge-collecting apparatus is to be of the Tow-Bro. type, so named after its inventors, Darwin W. Townsend, consulting engineer to the Milwaukee Sewage Commission and member of the firm of Consoer, Townsend, Older and Quinlan, and James Brower, superintendent of the Milwaukee sewage treatment plant. This apparatus is of the suction type and operates much the same as a vacuum cleaner in that it removes the sludge from the bottom of the tank without agitation. There will be two of these sludge-collecting units in each tank, each unit consisting of two long revolving arms, known as headers, equipped with numerous suction nozzles. These are propelled from an overhead truss through the medium of a common drive unit equipped with variable speed control to meet the requirements of varying conditions. As the headers rotate, the concentrated sludge accumulated at the bottom of the tank is sucked in through the nozzle and then carried on and out through the headers. The major portion of this sludge is returned to the incoming raw sewage, and the excess is converted into fertilizer.

The equipment is similar to that which has been employed in four of the present tanks, except that various improvements and refinements are being added. This method of sludge collection is the result of several years of experimentation and actual use on a production basis with highly successful results. One of the principal features of the method is that it continuously collects all the sludge from the entire area of the tank bottom with a minimum of redissemination of the settled sludge into the clear-water zone above. Another advantage claimed for this method is that it results in the maximum concentration of the sludge withdrawn. The Chain-Belt Co., Milwaukee, Wis., is furnishing and installing the sludge-collecting units.

Why Do Some Sewage Treatment Plants Fail?

THE failure of a sewage treatment plant to produce satisfactory results may generally be attributed to one or more of five causes: (1) faulty design or construction; (2) obsolescence; (3) industrial wastes; (4) overloading; and (5) faulty operation.

Owing to faulty design or faulty construction, some plants have never worked satisfactorily. If a plant was designed in accordance with the best engineering practices of twenty years ago, its failure to come up to the standard of present-day design cannot be fairly attributed to faulty design. If a plant does fail to function, however, owing to original faulty design, little can be done to correct the condition other than by reconstruction or replacement. Usually the latter is the more economical procedure.

The second cause for the failure of old plants to meet present-day requirements is obsolescence. This should not be confused with faulty design, although the net final result may be the same; namely, an economical correction of the condition may require major reconstruction or replacement. Under favorable conditions, septic tanks today give results reasonably satisfactory. In other places, however, on account of overloading, introduction of industrial wastes, hard water, stale sewage, a demand for better quality effluent, or other cause, it is economical to replace an existing septic tank with a more modern type of tank, in view of the better results that are obtained and the protection afforded the filters if a cleaner tank effluent is produced.

The introduction of industrial wastes is a third cause responsible for the failure of many sewage treatment plants. Plants originally designed for domestic sewage have had industrial wastes thrust upon them in increasing quantities until the entire plant ceases to function. The remedy is obvious—the pre-treatment of the industrial wastes so that the city sewage plant can absorb them, or the diversion and separate treatment of the wastes.

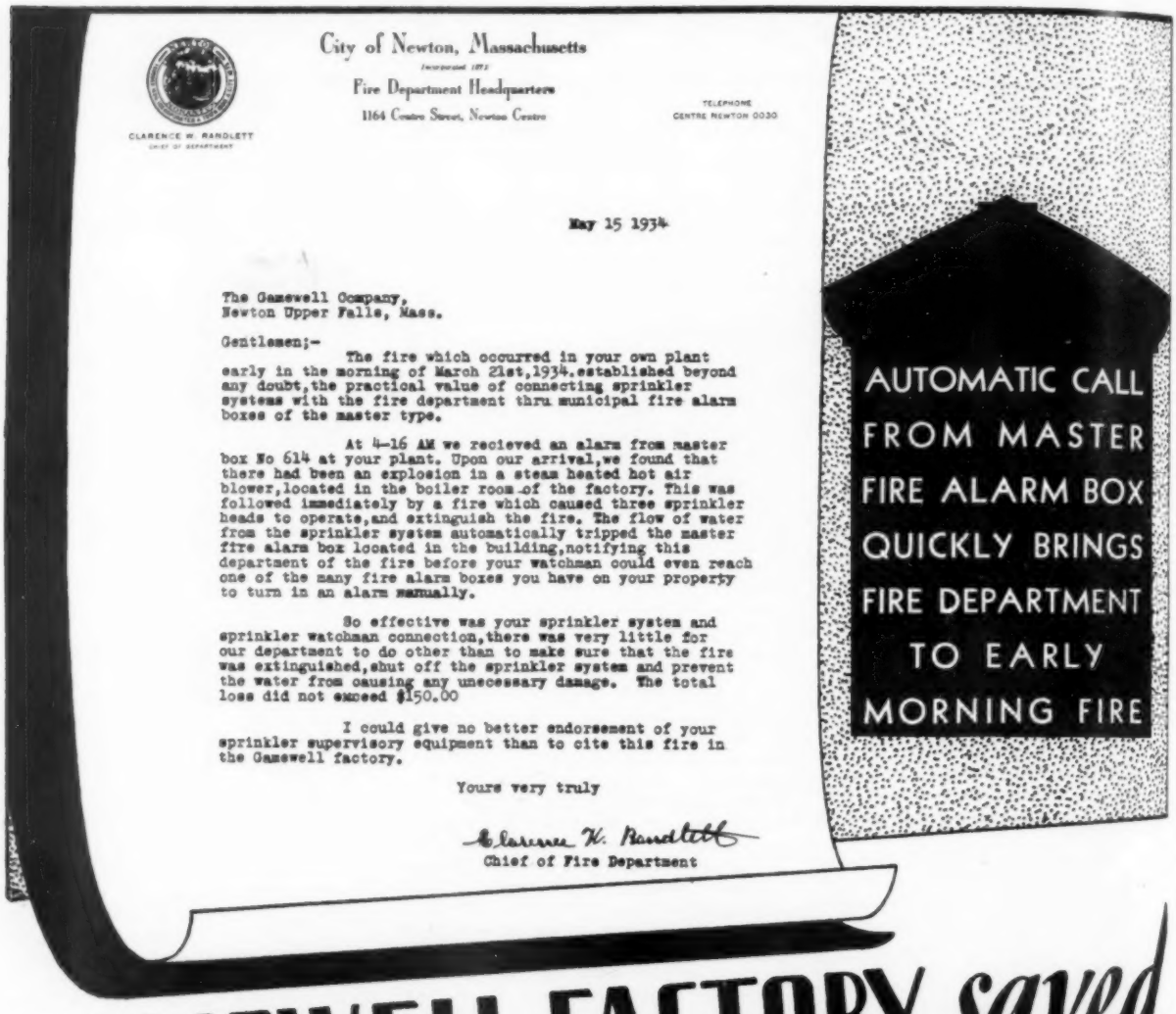
The fourth cause for the failure of sewage treatment plants is overloading. Lack of knowledge on the part of the designer as to the behavior of sewage, a tendency towards holding initial costs to a minimum, and unpredictable growth of municipalities since the plant was built, are the principal reasons for present-day overloading.

The fifth and most common cause for failure of a sewage treatment plant to produce satisfactory results is faulty operation. The chief difficulty seems to be the lapses in proper operation which result in intermittent periods of poor results. These lapses are usually caused by the fact that the operator, who generally has multitudinous other duties, must for a time entirely neglect his plant; or because of periodically recurring waves of false economy when no one is regularly assigned to the task of looking after the smaller sewage disposal plants; or to frequent changes in personnel; or to the occurrence of an unusual condition with which the inexperienced operator is unable to cope.

It is not intended to imply that the average small sewage treatment plant requires a great deal of time nor that it must be under continual technical supervision. Any plant does require the attention of an intelligent operator who understands the fundamental principles involved and who has the time to devote to the plant at regular intervals.

—From a paper presented by A. H. Wieters, Director, Public Health Engineering Division, State Department of Health, Iowa, before the fifteenth annual Iowa Sewage Treatment Conference and Iowa Waste Disposal Association, held at Iowa State College.

PART OF THE EXISTING SEWAGE TREATMENT PLANT AT MILWAUKEE, SHOWING THE EXTENSION UNDER CONSTRUCTION, IN THE BACKGROUND



City of Newton, Massachusetts
Incorporated 1873
Fire Department Headquarters
1164 Centre Street, Newton Centre
TELEPHONE CENTRE NEWTON 0030

CLARENCE W. RANDLETT
CHIEF OF DEPARTMENT

May 15 1934

The Gamewell Company,
Newton Upper Falls, Mass.

Gentlemen;-

The fire which occurred in your own plant early in the morning of March 21st,1934.established beyond any doubt,the practical value of connecting sprinkler systems with the fire department thru municipal fire alarm boxes of the master type.

At 4-16 AM we recieved an alarm from master box No 614 at your plant. Upon our arrival,we found that there had been an explosion in a steam heated hot air blower,located in the boiler room of the factory. This was followed immediately by a fire which caused three sprinkler heads to operate,and extinguish the fire. The flow of water from the sprinkler system automatically tripped the master fire alarm box located in the building,notifying this department of the fire before your watchman could even reach one of the many fire alarm boxes you have on your property to turn in an alarm manually.

So effective was your sprinkler system and sprinkler watchman connection,there was very little for our department to do other than to make sure that the fire was extinguished,shut off the sprinkler system and prevent the water from causing any unnecessary damage. The total loss did not exceed $150.00

I could give no better endorsement of your sprinkler supervisory equipment than to cite this fire in the Gamewell factory.

Yours very truly

Clarence W. Randlett
Chief of Fire Department

AUTOMATIC CALL FROM MASTER FIRE ALARM BOX QUICKLY BRINGS FIRE DEPARTMENT TO EARLY MORNING FIRE

GAMEWELL FACTORY *saved* FROM HEAVY FIRE LOSS —by OWN APPARATUS

It wasn't necessary for us to have an explosion and fire in our own plant to convince us of the value of connecting sprinkler systems with the municipal fire department through a Gamewell master fire alarm box (*known as the Sprinkler Watchman*). The service record of our *Sprinkler Watchman* hook-up in hundreds of other properties had convinced us on that.

Fire Chief Clarence W. Randlett of Newton, Mass., tells us in the above letter how our *Sprinkler Watchman* hook-up saved our own plant from a heavy loss. This is just one more case illustrating the value of a sprinkler system connected to the fire department through the dependable Gamewell master fire alarm box.

Every fire chief should encourage the sprinklered properties in his city to install this *Sprinkler Watchman* hook-up. It will save your city thousands of dollars loss in taxable property and prevent your taxpayers from being thrown out of work because of factories being destroyed by fire. We shall be glad to send you literature on our *Sprinkler Watchman*.

The
GAMEWELL COMPANY
Newton, Massachusetts
"A Box a Block"

Public Safety—Police, Traffic, Fire

Improving Police Methods

CITIES are taking steps to improve their policing efficiency in a variety of ways, according to the July issue of the Police Chiefs' News Letter, official bulletin of the International Association of Chiefs of Police.

Grand Rapids, Mich., educates the public in traffic accident causes through an accident investigation board. The board, consisting of two ranking police officers and an assistant city attorney, hears testimony of the participants in the accident, which is acted out with toy motor cars. This Police Department finds that such a procedure eliminates much of the confusion, uncertainty and long-drawn-out lawsuits that often result from accidents.

Cambridge, Mass., has just heard findings of a survey made of its Police Department which reveal that police beats laid out fifty years ago, when the city was half its present size, have never been rearranged. Modernizing city police coverage with auto patrol for the most part, limiting intensive foot patrol to crime areas, would make it possible to reduce the police force from 235 to 194 men. The financial saving is calculated at $101,580—nearly one-fifth of present salary costs. The Mayor says he is convinced that the Department should be modernized.

Fingerprinting, for other purposes than criminal catching, is advancing in popularity. West Virginia's State Identification Bureau now accepts voluntary filing of fingerprints by residents of the state, allowing parents to register their children's prints. The announced purpose is to give identification in case of injuries, loss of memory, change of appearance, etc. Difficulty in identifying victims of mine disasters has given chief emphasis to this new program. Oskaloosa, Iowa, has started the fashion of civilian finger printing among cities of its size, having recently instituted the practice of recording the prints of every man, woman and child within the town's corporate limits.

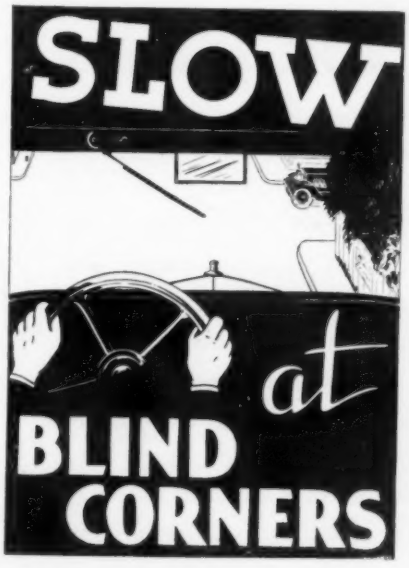
Traffic Law Enforcement by Courtesy

POLICE too often overlook the possibilities of courtesy in law enforcement, according to Donald C. Stone, Director of Public Administration Service, who is active in police matters. "A citizen spoken to politely but firmly is more likely to observe regulations carefully than one who becomes incensed at the police in particular and law enforcement in general as the result of abusive language used by an officer," says Mr. Stone. As a successful example of courtesy in traffic law enforcement, he cites the methods of Police Chief O. W. Wilson of Wichita, Kans.

Chief Wilson believes that printed warnings to traffic law violators are more effective than verbal reprimands. In Wichita, an autoist who breaks a minor traffic law is given a printed warning indicating his fault. He must sign the slip, which is filed at police headquarters. If he commits one or more additional offenses, he is given similar warnings, with the word that a fourth failure to observe rules will bring him into court. "Most drivers become very careful after the second or third warning," comments Chief Wilson.

Wichita, with Evanston, Ill., has a novel way of regulating pedestrian and automobile traffic at its busy corners. From a patrol car equipped with a loud speaker a police officer calls public attention to violations of traffic rules. To a jay-walker he may say: "The man now crossing the street against the lights is violating a city ordinance and is likely to become involved in an accident." Pedestrians are found to become more conscious of traffic regulations as a result of this public reprimand.

Many foreign countries use "courtesy methods" far more than we do, Mr. Stone comments. In England, for example, over nine-tenths of the offenders in minor crimes and about half those charged with indictable offenses are brought to court through use of a summons instead of by arrest. The English police find arresting unnecessary, an inconvenience to the offender and costly in police time and expense.



TWO RECENT POSTERS OF THE NATIONAL SAFETY COUNCIL

Preventing False Alarms on the Fourth

BY posting firemen from the off-platoon at fire-alarm boxes on July 3 and 4, the Providence, R. I., Fire Department prevented the wave of false alarms normally experienced in this holiday period. Tabulation of statistics by Chief Frank Charlesworth indicates that as a result of the experiment Providence companies responded to only two false alarms during the two days as compared with 90 such alarms in 1932 and 1933. Nearly a third of all bogus calls received in 1933 came on July 3 and 4.

The off-platoon men, empowered to make arrests, were stationed at boxes found by past experience to be subject to false alarms. They went on duty about 8:30 P.M. and remained out until about 3 A.M. Police called to do extra duty on the same nights, instead of reporting early in the evening and going home early, were out during the same hours as the firemen. A small card bearing an excerpt from the law was attached to each box to warn possible pranksters. The maximum number of companies out of quarters at any one time never exceeded 8, whereas in the previous year the maximum out was 22 companies. Besides the reduction of the number of false alarms from 90 to 2, the number of runs to bonfires was cut from 120 to 94.

Red Lights for Bicycles

MANUFACTURERS are now equipping all new bicycles with red reflectors, by means of which the bicycles are visible at night when overtaken by operators of automobiles. This improvement follows action of the National Convention of Bicycle Manufacturers, to which Charles A. Harnett, Commissioner of Motor Vehicles, suggested the desirability of illuminating bicycles, front and rear.

The report of the Nassau County Traffic Survey for June states that only 5 bicyclists were injured in that county in June, as against 10 in May and 11 in April.

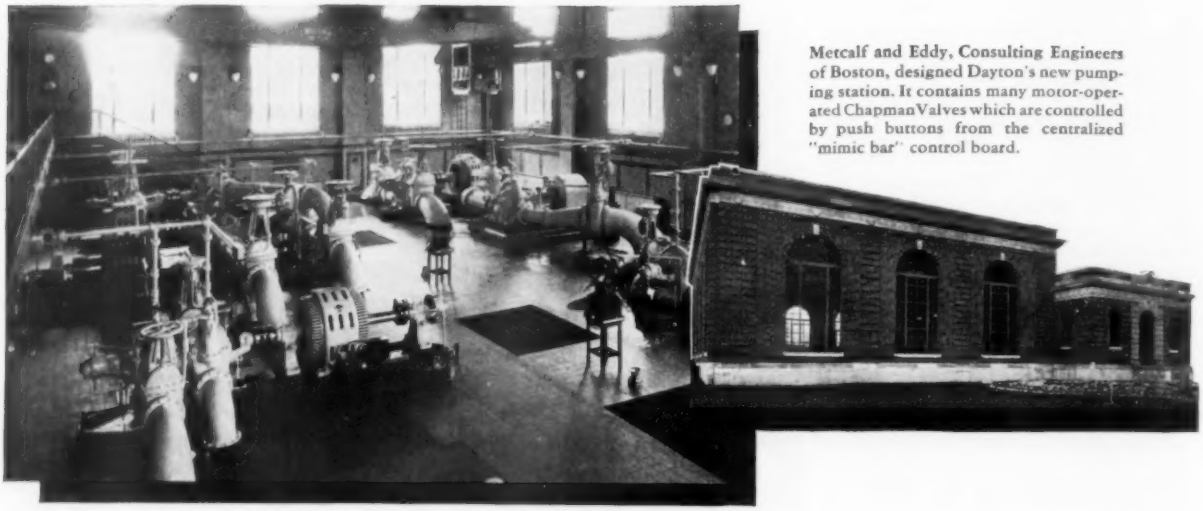
Choosing a Bathing Beach

See article under this title, by T. J. Powers, Principal Assistant Engineer, Michigan Stream Control Commission, in the June, 1934, issue of *Public Health*, published by Michigan Department of Health, Lansing, Mich.

Chapman Valves Give Permanence

and Low Maintenance —

to Dayton's New Pumping Station



Metcalf and Eddy, Consulting Engineers of Boston, designed Dayton's new pumping station. It contains many motor-operated Chapman Valves which are controlled by push buttons from the centralized "mimic bar" control board.

W. W. Morehouse, Director of Dayton's Department of Water, is pardonably proud of the engineering excellence of this pump room.

LEADING ENGINEERS BUILD FOR THE FUTURE WITH CHAPMAN EQUIPMENT

The citizens of Dayton, Ohio, have insured fresh healthful water for their city for many years to come with the new Keowee Street Pumping Station that furnishes 23 million gallons per day. Designed by Metcalf and Eddy, this plant is a splendid example of a modern electrically-controlled "looped" fresh water distribution system.

Dayton's desire to give this project permanence and low maintenance costs is confirmed by the selection of Chapman motor-operated and manually operated gate valves.

Make sure that your own projects give long years of service and rock bottom maintenance by building with Chapman Valves . . . available for every use in all sizes from ¼ inch to 9 feet, and sluice gates even larger. Write today for bulletins.

The CHAPMAN VALVE MANUFACTURING COMPANY

INDIAN ORCHARD, MASSACHUSETTS

Why not remember to mention THE AMERICAN CITY?

AUGUST, 1934

Vol. XLIX, No. 8

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

THE AMERICAN CITY advocates:

An abundant supply of clear, safe, palatable water

Streets and roads that are well built, well lighted, well maintained

Sanitary disposal of sewage and garbage

Fire and police departments properly trained and equipped

Traffic control for safety and facilitation; fewer grade crossings

Plenty of parks, parkways, playgrounds, and swimming pools

Banishment of slums, and building of well-planned home neighborhoods

Administrative efficiency and citizenship co-operation in bringing these things to pass

Regional Planning and Sewage Disposal

By E. FRENCH CHASE

Sanitary Engineer of the City of Seattle, and Past President, King County Regional Planning Commission

ALL state and regional planning must necessarily start from the centers of population, and one of its major problems is the proper disposal of municipal and manufacturing wastes.

Conspicuous among our natural resources are the streams, lakes and bays; these attract population, and population requires the disposal of sewage as well as the provision of a domestic and industrial water supply. There will always be a conflict between those who are interested in preserving the streams in their natural state, and those who consider that they have the right to use the streams for the disposal of domestic and industrial wastes. This applies to communities, as well as to individuals and corporations.

In the proper planning for a region, the subject of the disposal of wastes must be given careful consideration, otherwise some of the streams will become unfit as sources of water supplies, or for recreational purposes, and some waters will not even support fish life. In its broad sense this is distinctly a regional problem, and it is handled as such in many of the central and eastern states. The Commonwealth of Pennsylvania has gone so far as to classify the streams within its borders as follows:

Class I—Preserved in nearly natural condition for water supplies.

Class II—For sewage disposal after treatment, and water supplies after treatment.

Class III—For sewage disposal after treatment to the degree that it will not create a nuisance.

Every state should classify its streams in this manner, so that those who wish to use them for the disposal of wastes will know in advance to what extent the sewage or trade wastes must be treated before they can be discharged into the streams.

In the development of every city there are two territorial factors: (1) its own territory over which it has control; and (2) its environs, over which its control is indirect and in practice remote and ineffective. The arbitrary political barrier stops the operation of its laws, but does not stop the cross-flow of problems arising in the populous districts adjoining. Social and economic life has become too complex to consider any longer a single political subdivision as a self-sufficient unit. Rapid transportation has wiped out all political boundaries, and in the future, plans must comprehend the metropolitan areas, rather than conform to the narrowed needs and resources of each of the older political subdivisions.

The Waste-Disposal Problems of Portland and Seattle

This is well illustrated in Portland, Ore., where the city and 65 other communities, representing over 60 per cent of the population of the state of Oregon, are co-operating in plans for the proper disposal of their wastes, and this is the only way in which the problem can be handled. Centralized authority is an absolute necessity to put such plans into effect. This district now has a sewer board appointed by the Governor, and the city of Portland has employed a consulting engineer to guide the city in the planning of its sewerage system.

Seattle and the other communities surrounding Lake Washington have a similar waste-disposal problem, and since 1915 endeavors have been made to form a Metropolitan Sewer District to include the entire area around Lake Washington. In 1933, the Lake Washington-Metropolitan Sewerage Commission was created and the writer was appointed Chairman. Preliminary plans and estimates were prepared for a $1,720,000 sewerage system for seven of the more densely populated areas bordering on Lake Washington, but not including Seattle. The project was not started, because in preparing the final applications to the Federal Government for the purchase of $1,500,000

worth of bonds that had been voted, it was found that the county was not authorized by law to construct sewerage systems, even as a work-relief program.

From December 18, 1933, to the close of CWA activities, the existence of CWA Project No. 644 was carried on under the writer's supervision as a sanitary survey of Seattle employing 52 engineers. On March 1, 1934, this project was enlarged to include the adjacent areas north and south of Seattle, and other communities bordering on Lake Washington, including Bothell, Kirkland, Bellevue, Renton, Earlington and Bryn Mawr, and the personnel was increased to a maximum of 230 engineers as funds were provided. The purpose of the survey was to obtain basic information on certain conditions pertaining to the health and comfort of these communities, including: sanitary conditions in general; sewers and sewage disposal; control of manufacturing wastes; garbage collection and disposal; private water supplies and waste disposal; fresh and salt water beaches; contamination of streams, lakes and bays used for bathing; sports and fishing; abatement of smoke nuisance; public utilities; and records for the maintenance, repair, reconstruction and operation of the improvements and equipment under the control of the Department of Streets and Sewers of Seattle and studies and recommendations for future developments and public improvements.

From a paper presented before the Pacific Northwest Regional Planning Conference, at Portland, Ore.

Relaying Salvaged Brick in Lancaster

By WALTER W. GRAF
City Engineer, Lancaster, Ohio

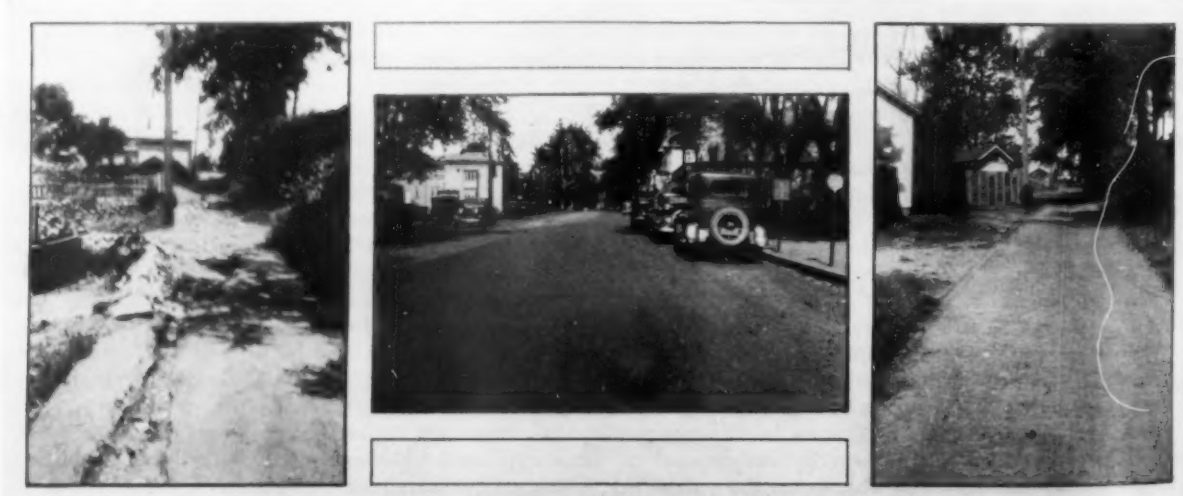
IN 1892, Main Street and Broad Street to Cherry Street, which is U. S. Route 22 in Lancaster, was paved with 3x4x9-inch repressed lugless paving brick on an 8-inch bank-run gravel foundation, with the gravel containing about 50 per cent sand. After 40 years of heavy traffic, the surface became very rough and needed attention beyond that of regular maintenance.

The cost of new construction of a street having an average width of 56 feet seemed at this time of financial stress to be prohibitive, therefore it was proposed to the State Highway Department that the present brick pavement be relaid as an NRM project on a 75-25 per cent, Federal-city cost basis. This proposal was accepted and $30,000 of Federal funds was set up with $10,000 of city funds. As this appropriation did not cover the entire length of the proposed project, the remainder of the work was completed by FERA labor using city equipment.

The first, or contract, portion of the improvement was constructed by Geo. B. Herring & Son, of Mansfield, Ohio, under the supervision of the State Highway Department. The FERA portion was done under the direction of the Division of Engineering of the city of Lancaster. The first brick to be relaid were on the FERA project, a 4-inch depth like the old pavement, with the worn side of the brick down. Two objections were found to this procedure: first, the different thickness of the brick made it impossible to get a satisfactory surface; and, secondly, the lugless repressed brick set too tight to properly admit the asphalt filler.

After some consideration, it was decided to lay the brick flat with the 4-inch face up, thereby giving a uniform brick depth, and the worn portion of the brick provided filler space. This procedure resulted in an excellent surface, good filler penetration and a saving of 20 per cent in new brick required. After seeing the results obtained, the State Highway Department adopted the same method.

The foundation was prepared by lightly scarifying the old gravel base, reshaping, rolling and adding 1 inch of slag on the Federal project or 1 inch of sand on the city project for a cushion. Asphalt filler was used on both.



IMPROVEMENTS OF AN ALLEY AND A MAIN STREET IN LANCASTER, OHIO

Center—North Broad Street, originally paved with brick in 1891 and relaid in 1933, using relief labor. The brick were relaid with the worn side down. Left—School Alley, which was a maintenance problem for many years owing to its 13 per cent grade. At the right is shown the same alley after paving with brick considered unfit for use on North Broad Street. The alley pavement consists of thin, worn, cobbled brick and bats on a 6-inch rolled bank-run gravel foundation constructed by relief labor. This was a truly 100 per cent salvage job

Let Traffic Determine Your Concrete Road Design

By FRANK T. SHEETS

Consulting Engineer, Portland Cement Association; former Chief Engineer, Illinois Highway Department

THE era of single standard concrete roads is over. Economy demands that roads be built to carry specific traffic loads. Traffic volumes can be predicted by highway engineers with reasonable accuracy. These predictions are made by careful observation of traffic increases on corresponding roads already improved. If examples are not available, simple traffic counts will give adequate indication of traffic volumes to be expected. Traffic counts on the road before it is improved are of little value, because they give no indication of the traffic which may be expected when the road is paved.

Thickness

Traffic expectancy is easily applied to construction. A road that will carry thousands of vehicles daily must be heavier in design than a road serving but a few hundred cars; yet both must be built strong enough to last at least one generation. Therefore, by correlating anticipated traffic with the known resistance of concrete to fatigue and stress repetition, proper design and thickness can be ascertained. These differences in required pavement thickness can result in savings from $2,500 to $5,000 per mile in road construction, and these savings may be used to extend the highway system.

Width

The width of the road must be governed by the number of vehicles, but the heavier loads must govern the thickness and strength of the slab. An analysis of the traffic on the primary roads of ten of the more heavily populated states shows an average of 1,097 vehicles per day, of which 109.6 were trucks. The average in eight western states was 409 vehicles per day, of which 45.88 were trucks. The average on secondary or main county trunk roads in the more densely populated state was 263 vehicles per day, of which 27.57 were trucks. Truck traffic constituted about the same proportion on all roads, 10 per cent of the total on primary roads in the densely populated states, 11.2 per cent in western states, and 10.5 on county trunk roads. Eighty-five to ninety per cent of all trucks have a gross weight of less than 16,000 pounds, and relatively few of the heaviest trucks travel the secondary road system.

Stresses

The most scientific method of determining stresses in pavement slab is the mathematical analysis worked out by Dr. Westergard, of the University of Illinois, but to simplify calculation we have worked out some empirical formulas which so closely approximate his results that the percentage of error is negligible. These formulas give conservative designing stresses for wheel loads moving at ordinary road speeds on slabs of average smoothness supported by uniform but relatively weak subgrades. Where the pavements are practically smooth or the subgrades have greater supporting power, the formulas are even more conservative.

Since the stress in a slab of uniform thickness is twice as great at the edge as in the center, and twice as great at a corner as at the edge, formulas have been worked out first of all for corners, both the unprotected and those properly reinforced. Formulas have then been worked out for pavements of various designs, both slabs of uniform thickness and the thickened edge design. These formulas have all been published in a pocket size manual, "Concrete Road Design, Simplified and Correlated with Traffic," prepared by the writer, which is available to all engineers on request to the Portland Cement Association. Experience and research have shown that for balanced design the center thickness should be two-thirds of the edge thickness, the increase in thickness being made in the outer 2 feet of the slab. Center thickness in excess of this ratio is unnecessary and uneconomical because the interior of the slab would have excess strength in comparison with the strength of corners and edges.

The safety factor of a slab under various wheel loads is a great convenience in analyzing the efficiency of cross-sections. By "safety factor" is meant the value obtained by dividing the modulus of rupture or ultimate breaking strength of the concrete in flexure by the stress produced by a given moving wheel load.

Research in the fatigue behavior of concrete shows that when the stress does not exceed 50 per cent of the ultimate strength, or when the safety factor is not less than two, the concrete will stand a practically unlimited number of stress repetitions without failure. When the safety factor is greater than two, the repetition of stress is actually beneficial and strengthens the concrete. When the safety factor is less than two, continued repetitions of stress will cause failure or breaking of the concrete. When the safety factor varies between one and two, the number of repetitions required to cause failure also varies, the number decreasing as the safety factor decreases. When there is a period of recovery between the stress applications, the fatigue action is minimized.

All pavement slabs should be designed to carry the predominating wheel loads with a safety factor of at least two. By selecting a design fulfilling this requirement, an unlimited volume of such traffic may be carried without fatigue of the concrete. The stress and safety factors should then be determined for the infrequent heavier loads. By use of the manual, the life expectancy, so far as fatigue is concerned, may then be easily computed. Applying the formulas to a 7½-5-7½-inch slab, properly reinforced, with the traffic of the average county trunk road, we find that this pavement will have a fatigue life of 59.8 years with the infrequent heavy loads using such a road. A

slab of this thickness is therefore ample for the traffic of this type of road, and any greater thickness is a waste of funds.

Similar computations are found in the manual for several types of slab under various traffic conditions, and computations may be made by the formulas for any slab under any traffic conditions. In these computations fatigue life alone is considered, but a slab which is properly built and strong enough to stand the traffic, with a reasonably satisfactory subgrade, is usually ample to stand ordinary damage from the elements.

After we had made the calculations by the formulas, we checked the results with the actual behavior of concrete in corresponding sections of pavement in the Bates test road, and we found that the computed results were more conservative than the actual results shown in the Bates road tests.

Cement-bound Macadam

A test road recently built of cement-bound macadam shows that concrete of strength equal to mixed concrete can be built by the penetration method, and the same formulas can be applied to this type of construction. Whether it is more economical of course must be determined by an analysis of material, labor, equipment and other costs on any given job, or by asking for alternate bids.

By using the simple formulas which have been worked out, it is possible greatly to reduce the cost of paving lighter traffic roads, and this makes it economical to pave many roads where paving would not be economical if built of the same strength and thickness required for heavy traffic roads.

Plan the Road for the Traffic

When we compute the annual cost of concrete, based upon a reasonable life expectancy, allowing for depreciation, interest, maintenance, and salvage value, and then add vehicle operating cost, we find that under average conditions concrete pavement is as economical as a dirt road when traffic is as low as 109 vehicles per day. In a similar manner the volume of traffic at which concrete becomes more economical than gravel or any other type of road, can also be computed. The engineer planning any road should not only be able to determine the most economical design which is ample for the traffic, but he should also be able to demonstrate its economy when road cost and vehicle operating cost are considered together.

ACKNOWLEDGMENT.—From a paper presented before the Michigan Highway Conference, University of Michigan, Ann Arbor, Mich.

The Cincinnati Electric Rate Settlement

By C. A. DYKSTRA
City Manager

SOME new ground is broken in the recent electric rate settlement between the city of Cincinnati and the Union Gas and Electric Co. of that city. This settlement was made although the company was before the State Public Utilities Commission on an appeal from a rate ordinance passed by City Council in October, 1933.

The October ordinance legalized the approximate rates suggested as proper in a report made by Burns & McDonnell to the Cincinnati Council last summer. The final rate which goes into effect under the new contract just signed, runs pretty close to the schedule recommended by the consulting engineers. The justification for the difference is found in the fact that 1934 prices and company revenues show considerable changes. Moreover, the NRA compulsions introduced a new element after the Burns & McDonnell study was completed.

Perhaps the new features in this settlement are worth noting:

(1) Rates drop each year for the four years of the contract, on the theory that customers will share in the growth of the business.

(2) Provision is made for further decrease or increase in the schedules if impositions made by state or Federal action increase or are removed. In so far as expenses are within company control, they do not affect this arrangement.

(3) In this settlement the utility recognizes quite frankly that it owes a responsibility to consumers as well as to security holders and that it is not solely a profit enterprise.

Conferences with the company began in June of this year. Questions of valuation were waived and a study of operating expenditures, gross revenues and net earnings was initiated. Moreover, attention was directed to possible increased revenues which should follow a reduction in rates.

The amount of reduction* in net revenues was finally agreed to, and then a rate structure was worked out to fit the new set of facts established. The abolition of the room rate (domestic demand charge) and a reduction in the minimum bill followed as a matter of course.

In order to illustrate how this four-year contract will affect the price of current to domestic consumers, the schedule is appended here.

	1934	1935	1936	1937
First block	5c	4.5c	4c	4c
Second block	3	3	3	3
Excess	2	2	1.8	1.5

Although the room demand charge is eliminated, the two first blocks are calculated on the number of rooms to be served from one meter. Five times the number of rooms times the current rate is used in each of the first two blocks. Thus a four-room house uses the following formula in 1934:

$$4 \times 5 \times 5c = \$1.00$$
$$4 \times 5 \times 3c = .60$$

or $1.60 for 40 kilowatt-hours of current consumption—an average of 4c a kilowatt-hour. For an excess of 60 hours the cost is 60 × 2c, or $1.20. In a four-room house 100 kilowatts costs $2.80, or an average of 2.8c per kilowatt-hour.

The 1937 formula will make this same bill in a four-room house $2.30, or an average of 2.3c per kilowatt-hour. The average savings to the domestic consumer range from 27 per cent in 1934 to 39 per cent in 1927. The minimum bill is set at 60c for all houses of six rooms and under, and at 10c a room for all over six rooms.

The schedules for commercial and small power users set up practically the above current charges, with variations for demand and connected load factors. The percentage savings are comparable.

A comparison of the 1937 schedules with the Knoxville, Tenn., TVA rate indicates an advantage to the Cincinnati average consumer. There is very real public satisfaction in this settlement among Cincinnati consumers.

* 1934 reduction in revenues of $2,000,000, increasing in 1937 to $2,500,000; total for 4 years, $9,000,000 plus refund of $1,200,000.

The Grand Central Parkway Approach to New York City's Triborough Bridge

By B. L. VAN SCHAICK

**Executive Secretary,
Long Island State Park Commission,
Babylon, N. Y.**

THE drawing reproduced on the cover of this issue of THE AMERICAN CITY represents a section of the proposed Grand Central Parkway approach in Queens to the Triborough Bridge, now under construction in New York. This portion of the parkway borders Flushing Bay from Northern Boulevard to Jackson's Creek. The work is being done by the Triborough Bridge Authority in cooperation with the Long Island State Park Commission and the State Department of Public Works.

The principal features of the plan for this section of the parkway consist of the placing of approximately 3½ million yards of hydraulic fill excavated from Flushing Bay to form the foundation for about a mile and one-quarter of the parkway. The parkway pavement will be separated into two one-way roadways, each wide enough to carry three lanes of traffic, separated by a grass panel. Along the parkway side of the fill there will be a wide landscaped area between the roadway and a sea-wall to be constructed. A pedestrian path and esplanade will border the sea-wall. Pedestrian bridges over the parkway connecting Ditmars Avenue on top of the bluff with the sea-wall along the bay will be constructed. A boat basin will be established at the mouth of Jackson's Creek, and a connecting channel will be dredged from the basin to the main channel.

An interesting part of the work, important principally to engineers, is the solution of the problem of overcoming settlement of the roadway which might result from the excessive depth of mud in Flushing Bay. Borings taken for the purpose of exploring foundation conditions along this section of the parkway indicate depths of mud up to 35 feet. Past experience in placing roadways in the general vicinity of the bay indicate severe settlement of the roadbed, with consequent heavy maintenance and repair charges. Under the proposed parkway plan, however, the work will consist of placing the foundation fill hydraulically, beginning at the shore end and working out towards the bay. Under this scheme the mud will gradually be displaced by the weight of the new sand and will eventually slide out into the bay, thus leaving relatively clear sand under the actual roadway. After this operation is completed, the hydraulic fill will be topped with a layer of common soil and made ready for grading, seeding and planting. The sea-wall and boat basin will be constructed subsequent to the placing of the roadway foundation.

Courtesy of New York Daily News

In this airplane view the existing triborough railroad bridge is shown at the left of the proposed highway bridge, the artist's conception of which, with its approaches, has been superimposed on the photograph. In addition to a large suspension bridge, the new improvement, as shown, will include three smaller bridges, all linked by elevated causeways. The over-all length of the whole structure will be 17,710 feet, 13,560 feet of which comprise the main section from The Bronx to Queens. The lines stretching across the picture in the background indicate the proposed Grand Central Parkway extension leading direct to the bridge. Paralleling it is Astoria Boulevard

Rolling Bituminous Surfaces

Georgia Highway Department Eliminates Waves in Resurfacing Old Bituminous Concrete Highways

ACCORDING to the United States Bureau of Public Roads, if every road surface were laid absolutely smooth and if the wheels of every carrier were perfectly round, the life of our roads would be immeasurabbly increased, for the reason that impact and shear, two of the greatest destructive forces, would be eliminated. Finishing machines, side forms, straight edges, road rollers, etc., represent a few of the various mediums developed through conscientious study to approach this ideal. The State Highway Department of Georgia has been doing some interesting resurfacing work in which special effort was made to approach the ideal of an absolutely smooth surface.

Details of the Resurfacing

In the southern part of Georgia on U. S. Route 41, near Hahira, in Lowndes County, an existing bituminous concrete pavement, 20 feet wide, was given a covering of emulsified asphalt, rolled to a thickness of from ½ to 1 inch. A special slag from Birmingham, Ala., graduated from 1¼-inch down, was distributed over the existing base at the rate of 100 pounds per square yard. Two-inch planks about 8 inches wide, laid flat along the edges of the pavement, served as forms to prevent the slag from spreading. After the stone was distributed for approximately 800 to 1,000 feet, a distributor sprayed the aggregate with ½-gallon of a slow-break emulsified asphalt of the following analysis:

Specific gravity at 77° F.	1.020
Demulsibility	14.5
Asphalt	62.0
Water	38.0
Penetration of residue	13.4
Ductility	60.
Specific gravity of residue	1.033

This was followed by mixing with a retread machine, mixing one-half the width of the road going in one direction and the remaining half while returning. Again the distributor passed over the mixture, spraying ½-gallon of the same asphalt to the square yard, making a total of 1 gallon per square yard. This was followed at once by a second mixing with the retread machine, which was immediately followed by a blade grader. Upon completion of the blading, the entire surface was rolled by a 12-ton, 3-wheeled roller in the regular manner, starting at the edges and rolling toward the center, lapping half the rear roll on each trip over. After the entire width had been thus covered at least once, slag screenings graded from ¼-inch were uniformly distributed over the surface at the rate of 12 pounds per square yard, from an improvised container attached to the dump-truck.

All this was standard practice, but did produce a more or less wavy surface, a condition which the Highway Department was seeking to avoid. At this point the rolling was resumed, with an Austin Roll-a-Plane. This roller differs from an ordinary 3-wheeled roller in having an additional wheel in the center which is hydraulically controlled, can be raised or lowered at will or set in an exact plane with the front and rear rolls of the roller. It also can be removed entirely if desired. The action of the three wheels rotating in the same exact plane necessarily establishes a plane. Should any irregularity of surface be encountered, the center wheel, compacting the surface, will bear down with fully 85 per cent of the entire weight of the machine and flatten out the curves.

On the Georgia job the center wheel of the Roll-a-Plane was lowered until it occupied a position about ¼-inch above the plane of the front and rear rolls. The entire width of the road was then rolled to eliminate the larger waves. The center wheel was then set in its normal, or plane, position with the front and rear wheels, and the entire surface was rolled again.

A Smooth Surface

A remarkably uniform smooth surface resulted and no irregularities were found, although the work was checked daily with a surface straight edge adjusted to detect errors of ⅛-inch in 10 feet, which is more severe than standard practice for concrete paving in most states. Gas and fuel consumption and other operating costs were about the same as in ordinary practice, except that a better road surface was obtained with less rolling.

For the most part, the smoothing action of the center wheel was accomplished without difficulty. The normal amount of voids in this particular mixture was such that it almost invariably accepted sufficient compaction within itself to permit the forming of a plane. In a few instances areas were encountered where an excess of material had been spread. In such cases, the middle roller, after compacting the material to refusal, would push the excess aggregate before it, making it necessary to remove this excess before a plane could be established.

The resurfacing crew worked under the immediate direction of D. B. Thompson, Division Maintenance Superintendent, under instructions from H. H. Johnson, Bituminous Engineer for the Georgia State Highway Department.

Chamber of Commerce Has Credit for First Completed PWA Housing Project

IN a July 29 press release from the Public Works Administration, announcement is made of the completion of the housing project at Alta Vista, Va. This, the first PWA housing project to be completed, provides small modern homes at rentals of $4 and $5 per room per month, replacing overcrowded, unsanitary living conditions. In reciting the history of this development, the official release states:

"Alarmed over the housing condition which was growing steadily worse, and over the economic, health and social costs of inadequate housing in the town, the Alta Vista Chamber of Commerce sponsored a housing movement. Its committee contacted PWA's housing division, and acting on its advice, formed the Alta Vista Housing Corporation, a limited-dividend group. Stock to the extent of $16,000 was underwritten by the business men, townspeople and the mills, and a loan of $84,000 was secured from the Public Works Administration. . . .

"The project differs from a Federal housing project, in that it was sponsored and organized by a private group working through a limited dividend. The $84,000 borrowed from PWA will be repaid as a straight loan. This distinguished the project from a Federal undertaking, where the Government furnished funds without any loan involved."

Underfeed Stokers Solve Boiler-Plant Problems in Grand Rapids

By CARL GRINNELL

Superintendent, Water and Light Department, Grand Rapids, Mich.

WITH the rapid growth of the city of Grand Rapids, the city water and electric light plant faced heavy demands because of water-main extensions and the increasing street-lighting load.

Two problems presented themselves a few years ago: first, to increase the peak load capacity of the steam plant; and, second, to improve the evaporation. The six boilers had natural draft and used chain grate stokers. This included two 300-hp McNaull boilers, which were obsolete and were to be removed, two 509-hp Babcock & Wilcox longitudinal drum boilers rated at 160 pounds per square inch pressure, and two 350-hp B & W longitudinal boilers originally rated at 160 pounds per square inch but later reduced to 150 pounds pressure.

As the peak load increased, more and more trouble was experienced in attempting to get higher ratings with the chain grate stokers. It was necessary to run the two 509-hp and one 350-hp boiler, leaving only one spare 350-hp boiler to be put into service when one of the other boilers was being cleaned, or for standby service. This condition existed for three or four months each summer and became increasingly acute as time went by. It therefore became necessary to consider two more modern and efficient types of stokers. In view of these conditions, together with the fact that it was difficult to hold a good fuel bed and thus get proper combustion (the coal used was Kentucky and West Virginia nut, pea and slack), and, incidentally, low evaporation, because the amount of air was excessively high, two multiple-retort underfeed stokers were purchased, and installed during the winter months of 1929, to meet the following summer's peak load.

Installing the New Stokers

To get proper height and volume in the new furnaces, it was necessary to lower the floor level under the boilers. By dropping the floor level for the stokers, larger furnace volume was allowed and increased peak-load capacity was obtained, as well as a more efficient combustion of the coal.

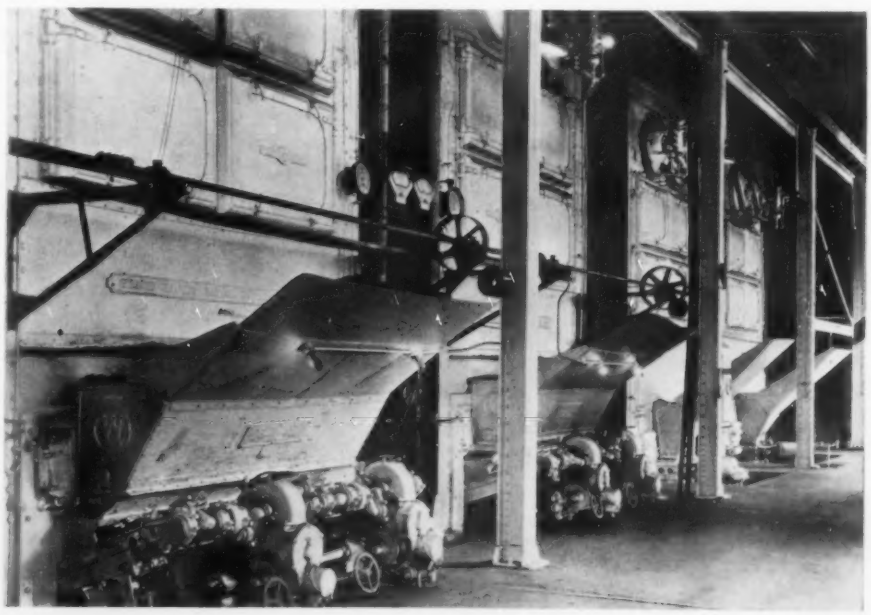
There was a maximum of 5 feet clearance between the tubes and the grates, and this was less in the Dutch ovens at the front of the furnaces. Therefore the furnace volume was very small.

Later, the matter of repairing and replacing parts of the old chain grate stokers under the two 350-hp boilers was carefully considered, from both an engineering and an economic point of view. Because of the satisfactory operation of the new multiple-retort stokers, as to increased load capacity and increased efficiency, two single-retort stokers were purchased for the two 350-hp boilers.

The problem of getting sufficient height and volume for the new furnaces under the 350-hp boilers was met, as in the case of the 509-hp boilers, with the multiple-retort stokers. This gave the furnace volume or space desired.

Better Operation Secured

Since the installation of these four modern stokers, the maintenance cost has been greatly reduced. Peak-load ca-



COMPLETE VIEW OF THE MULTIPLE- AND SINGLE-RETORT STOKERS IN OPERATION, GRAND RAPIDS WATER AND ELECTRIC LIGHT PLANT

pacity has been greatly increased; evaporation has increased, and the interruptions due to stoker troubles have been practically eliminated. The following brief tables give a general idea of the results obtained:

Year	Type of Stokers in Use	Actual Evaporation
1928	—4 chain grate stokers	8.90
1929	—2 multiple and 2 chain grate	9.78
1930-31-32	—2 multiple- and 2 single-retort	9.91
Cost of stoker repair parts for 2 years (1932-33)		928.91
Stoker repair parts per ton of coal burned (since June, 1931)		$.052
Stoker repair parts per ton of coal burned (after April, 1930, and up to June, 1931)		0.04

The new stokers are under better control of the firemen, and with the installation of Bailey boiler meters, a Hays CO_2 recorder and Ruggles-Klingemann control, the operation and results are most gratifying, both to the operating staff and to the management of the boiler plant.

Prior to June 1, 1931, the city plant was carrying the street-lighting and the water-pumping load, and the resulting steam load was nicely balanced throughout the 24 hours. This enabled the operators to arrange uniform firing, thus maintaining the proper bed of fuel over the grates. Under these conditions the stoker repair cost per ton of coal burned was slightly over $0.04.

The street-lighting load (approximately one-half of the total) was dropped June 1, 1931, by the leasing of the street-lighting system to the public utility. Because of this, the very light night boiler load has caused the stoker maintenance to be slightly higher than it was previous to that time; in fact, the cost for repairs per ton of coal burned amounted to $0.052 under these unbalanced conditions.

Modernizing a Water Distribution System

Gate Valves Inserted in Water Mains Under Pressure

By CHARLES STREITHOF

General Superintendent, Department of Water Works, Evansville, Ind.

THE first water works of Evansville, Ind., was built in 1873 and, as with many other water plants built at that time, not much thought was given to the sizes of pipe and the number of valves installed in the distribution system. Inspection of old records reveals that very few valves were used and those installed were at distances of 2,000 to 3,000 feet on 10- and 12-inch lines, and from 1,500 to 2,000 feet apart on smaller lines. In 1895, when larger mains were laid, valves were placed 1,500 feet apart on 20-inch lines, 2,600 feet apart on 24-inch lines, and 3,600 feet apart on 30-inch lines.

After the present pumping station was placed in service in 1901, more attention was paid to the laying of water mains and the installation of valves. In 1914 and 1915 a thorough inspection of the distribution system was made. At that time it consisted of 115 miles of 4- to 30-inch pipe. During this inspection a close check was made on the spacing of valves and the territory which would be affected if it were necessary to close the valves.

A detailed map was made of the distribution system, indicating the location of different sizes of pipe, the valves and fire hydrants with or without valves. Then, after careful study, the proper location of additional valves needed to improve the system was indicated in red ink. When this report was submitted to the water-works trustees, an appropriation of one-half of the amount needed for the entire work was made.

Fire Hazard Created by the First Method of Valve Installation

The first work to be done with the appropriation was installing double hub valves, sometimes two or three at one shut-down, but because of the large territory which was out of water owing to the sparsity of valves, the fire hazard was greatly increased and this method had to be abandoned. The trustees then appropriated enough money to purchase a valve-inserting machine for 4-, 6- and 8-inch valves, and also contracted for the installation of a few larger valves in the summer of 1917.

As funds were running short during war time, and because of the low water rate and the high cost of material, the work of installing valves ceased, and no more were placed, except on new lines, until the summer of 1933. All 6- and 8-inch lines built since 1914 have a valve at each intersection and at about 350 feet distant in each direction. On 12- and 16-inch mains, the valves are spaced 650 to 700 feet apart, with valves on all branch lines leading from the larger mains.

Little Time and Water Lost by New Method

During the summer of 1933, two 30-inch, one 24-inch, two 20-inch, four 16-inch, five 12-inch, two 10-inch, five 8-inch, and fourteen 6-inch valves were inserted. A contract was made with the A. P. Smith Manufacturing Co., East Orange, N. J., to furnish the inserting machines and one operator, for inserting the 10- to 30-inch valves under pressure. The smaller Smith machine had been purchased by the Water Department and is operated by a Water Department crew.

The average time for inserting the 30-inch valves was about 16 working hours, and for the 20- and 24-inch valves from 8 to 10 working hours. This time did not include the digging of holes or backfilling the trench. During the entire operation there was no interference with the water service, and the amount of water wasted did not amount to more than two or three barrels for the larger sizes. With a crew of five men at the smaller machine, it was possible to install as many as three 6- and 8-inch valves a day, with another crew taking care of digging and backfilling.

IN 1917	
Cost of labor and material for inserting 2 20-inch, 4 16-inch, 3 8-inch and 35 6-inch valves	$ 5,517.00
Labor, lead, yarn and valve boxes	1,603.85
Repair of streets	426.50
Total amount	$ 7,547.35
IN 1933	
Cost of labor and material, 35 valves 6-inch to 30-inch	$16,476.00
Material furnished by the Water Department—lead, yarn, manhole covers, bricks and cement	459.72
Labor	2,233.88
Repairs of streets	672.00
Total amount	$19,841.60

At present there are 214 miles of water mains in the distribution system, ranging from 4 to 30 inches in diameter. There is not much 4-inch pipe left, for most of the older pipe of this size has been replaced with larger pipe. There are 3,992 valves of various sizes, ranging from 4- to 30-inch, and 1,467 fire hydrants with 6-inch branches and 6-inch control valves on each hydrant. There are 22,134 services from 1 to 6 inches in diameter, and 21,637 meters from ⅝- to 6-inch in size, and 96 installations of automatic sprinklers.

The average valve spacing throughout the residential and manufacturing districts is now 550 feet. In the congested district the spacing is 700 to 900 feet because the water mains are under the street-car tracks, and the inserting machine could not be used. Water mains located outside the city limits are provided with valves every 600 feet on 6-inch and 8-inch lines, but the 20- and 24-inch lines extending from the city on the north to the reservoir have valves every 2,500 to 3,000 feet.

A 20,000,000-gallon reservoir 7 miles north of the main pumping station at an overflow elevation of 177 feet above the pump floor is connected direct to the distribution system. This makes it possible to supply the city with 50 pounds pressure, should the pumps at the main station be shut down. Under present conditions, the supply in the reservoir will furnish the city with water for two or three days. The inlet through two 24-inch lines 18 feet above the bottom of the reservoir is provided with check valves, and the pipes are laid along the side of the reservoir. The outlet is 30 inches in diameter and is laid in the center of the reservoir at the bottom, connecting to a 30-inch header which supplies the 20-inch and 24-inch lines over separate routes to the city.

The reservoir is provided with an Easterline and Angus water-level recorder, with the recording instrument set in the main pumping station.

Two high districts, one north and one west of the city, are supplied with water through booster stations and a 100,000-gallon tank in each district. A total of 10½ miles of 6- and 8-inch pipe, and 39 hydrants are connected to the two booster systems, which are direct-connected to the general distribution system, separated only by check valves.

From a paper presented before the Indiana Section, American Water Works Association.

High Values for High Taxes

"PUBLIC expenditures should be viewed as purchases—purchases of labor, of supplies, and of contractual services. Expenditures of a governmental unit are affected by changes in the price of labor, in the wholesale price of commodities, and in the price of construction projects just as truly as are the expenditures of a private business. In fact, the governmental unit may be less able than a private firm to escape the effect of rising prices and less able to run to cover in a period of economic depression. When costs become burdensome to business, business can curtail or suspend temporarily the high-cost operations. Government can curtail somewhat—and has done so in this depression; but government cannot close up, nor can major public services be even temporarily suspended when costs rise. Government must protect life, guard rights in property, enforce contracts, and maintain indispensable community services, such as highways, sanitation and fire protection. On the other hand, when a crash of prices leads to business curtailment and to the discharge of large numbers of employees, government is faced not only with the necessity of maintaining the usual services but also with the necessity of feeding industrial labor until industrial activity is resumed. Indeed, the hope of prompt resumption of business when the economic skies clear is based not merely on the confidence that government will protect property and enforce contracts, but also on the assumption that government will prevent the grave physical deterioration of the labor force and the destruction of labor morale."

The foregoing analysis of some of the reasons which justify and require liberal public expenditures is from the recent monograph of the Bureau of Business Research of the University of Pittsburgh, on "The City Real Estate Tax in Pittsburgh." Discussing the substantial increase in Pittsburgh's governmental costs since 1915, the author, J. P. Watson, says in part:

"Some there are who claim that much of the tax growth is due to graft and waste. No doubt both graft and waste affect public business; but there is no way of estimating to what extent, if to any extent, the increase in the amount of taxes has been due to these factors. There would be cause to marvel if a government conducted by human beings were not at least somewhat lacking in efficiency and integrity. Probably it cannot be demonstrated, however, that public business is less efficient than private business; and there is room to doubt whether it can be demonstrated that it is less honest, since most evidences of lack of integrity in government show at the same time lack of integrity in private business. Direct theft of public property is generally the only way an official can extract city resources without the cooperation of people with whom city dealings are conducted. But the major graft in American cities is not in outright embezzlement; it is in payroll padding and in irregularities on contracts for materials, supplies, equipment and construction. Therefore, something approximating a millenial housecleaning, not only in public offices, but also in private offices, would be the only possible means of eliminating the graft on public treasuries. Meanwhile, part of the public money will continue to trickle through questionable channels; but graft rarely explains a very large part of the tax bill. Waste and incompetence no doubt are significant factors in the tax bill, but choice of public administrators on the basis of ability to round up the vote will not cure the evil.

"Even though there is some measure of graft and inefficiency, it would be necessary to show a large increase in theft and waste since 1915 before it would be possible to consider these factors of much importance in the increase of city taxes. And when prices, population, area of the city, vastly improved streets and bridges, necessary expansion of fire and police force and equipment, and extended care of the ill and the poor are taken into account, there is reason to doubt that waste and such brigandage as may have been perpetrated by city officials and cooperative citizens would explain any very large part of the increase in real estate tax totals. Government of honesty and efficiency should be sought, of course. There can be no doubt that officials of integrity and competence, given moderate community protection against political hamstringing, can provide better service for less than poor service usually costs. But, at best, the governmental job of the city is big, costs a great deal of money, is growing, and will cost more money."

Corrugated Pipe Sewer Carried over Ravine on Trestle

Winter Construction and Low Cost Are Features of Unusual Project

By JOSEPH HERRMANN

Assistant City Engineer,
Conneaut, Ohio

THE city of Conneaut, in northeastern Ohio, was confronted last fall with the problem of providing drainage for an outlying district. It was necessary to cross an adjacent ravine and carry the sewer to a trunk-line outlet. Because there would not be sufficient flow to operate a siphon or economically operate a "lift," especially during the winter months, it was decided to carry the sewer across on a trestle.

Various types of pipe and trestles were considered. Conditions were such that construction had to be completed by a definite date, which made it necessary to work through the winter months in temperatures ranging from freezing down to 15° below zero. Furthermore, this was a Civil Works Administration project, so the use of skilled labor was limited and practically no equipment was available for handling heavy pipe or pouring and protecting concrete during freezing weather. After much consideration, it was decided to erect structural iron bents of the "A" frame type set on concrete footings, with a 15-inch Armco paved invert corrugated pipe placed on the bents.

The ravine at its deepest place is 32 feet below the invert of the pipe, and the crossing required 420 feet of pipe. The bents were made of two 6-inch channel irons placed back to back for each leg, with ⅜- by 1½-inch sway bracing bolted between the legs. Angles at the bottom hold the frames to bolts set in the concrete footings, which are 30 inches deep and 24 inches wide. The length of the footings depends on the height of the bents. At the top of each bent are angle-irons which support a 10-inch channel 4 feet long, which serves as a saddle. "U" bolts hold the pipe in place.

The structural iron was laid out in a local sheet-iron shop by a mechanic, then drilled and assembled by CWA workers and taken to the job.

The bents were erected on 20-foot centers with ropes and pulleys, guyed, and a wooden "T" fastened to the top. When two bents were in place, a 28-foot section of pipe, weighing only 600 pounds, was pulled up by the pulleys fastened to the wooden T's, and dropped into the channel saddle. When two sections of pipe were in place, with the asphaltic pavement at the bottom, the connecting band or collar and clamps were put on and tightened up. Then burlap saturated with gasoline was wrapped about the joint and ignited, to warm the asphalt and enable the joint to be drawn up still tighter.

GENERAL VIEW OF THE 420-FOOT AERIAL SEWER AT CONNEAUT, OHIO

Because of the long sections of pipe, only 14 field joints were necessary. The sewer is now running about 4 inches of water. No leaks have developed.

No special tools of any kind were used in erecting and assembling the pipe—only hammers, wrenches, ropes and pulleys. Only CWA labor was used.

The entire cost of the material for the trestle and pipe line did not exceed $1,500. The work was done under the supervision of the writer.

Snow Removal in Cities—
Time Keeping for Temporary Labor

Unique System Developed in New York City Applicable Wherever Relief Labor Is Used

THE new temporary-labor time-inspection system installed in New York City last winter enabled the Department of Sanitation to reduce its five-year average cost of snow removal from $105,000 to $89,000 per inch during two storms which occurred in fifteen days of each other, the second of which was the largest snowfall the city of New York has experienced in eight years. Part of the savings was effected through a new checking system for contractors' snow loads, which will be described in a later article.

In years past, New York has been noted for favoritism in the selection of emergency laborers, and there have been charges of padding of payrolls in many districts. Because of the rush and red tape in the handling of this work, the former method of time inspection and emergency laborer control left open many avenues for discrepancy.

Eligible Unemployed Laborers Tabulated

Prior to the snow season, a letter was sent to each of the welfare organizations within the city, requesting them to have each unemployed man on their records report at a specified time at the district station near where he lived, to qualify for snow-removal work. Each of the men reporting was given a test on a pile of sand to ascertain his physical fitness for this type of work, and if he performed the work satisfactorily, he was given a Snow Registration Ticket, printed by the Department on a Multilith, and was instructed to report at the district station whenever a storm occurred.

When these men reported for work during a storm, each was given an envelope containing a Snow Laborer's Time Ticket, good for the duration of the storm, an Inspection Card, good for one day only, and a half Speedaumat plate on which was embossed in large type the particular laborer's number for the storm, which corresponded with the serial number on the time ticket. The laborer was requested to keep this complete envelope with him at all times. Failure to do so, or loss of the envelope, caused him to be fined one hour's pay. The laborers were then sent to the respective stations of the city in which they were to work.

A CITY INSPECTOR RECORDING THE TIME AND ATTENDANCE OF A TEMPORARY WORKER ON SNOW REMOVAL BY MEANS OF A SMALL ADDRESSOGRAPH ATTACHED TO HIS BELT

Two Regular Inspections Daily

Two inspections a day were made by Department of Sanitation inspectors, each of whom was equipped with a Speedaudresser, mounted on a regulation army pistol belt on his person. Each inspector, as he left his station in the morning, had permanently inserted in the bed of the Speedaudresser one-half of a Speedaumat plate which had been embossed with the name of the borough, district section, "A.M." and an inspection number for that particular inspection period. He then went to each gang of laborers, checked up on their activity and requested the individual envelopes. From each he extracted and inserted the laborer's half of the Speedaumat plate in his Speedaudreser, completing the unit, and imprinted the "A.M." section of the Inspection Card, filling in the time of inspection by hand.

If a man was found loafing or violating the rules, his plate was taken away from him, he was dismissed and the time of dismissal written in. This automatically threw the man off the job at once. In this case, the time card was punched for only the number of hours worked up to the time of inspection. Should any gang foreman be found padding payrolls or violating rules, he was immediately released from the job and sent to headquarters on charges.

After completion of a morning's inspection, the inspector's plate was turned in at the district station at noon, and a messenger from headquarters canvassed each district, collecting the plates at that time, so that they could not be used again during the storm.

Inspectors' Plates Changed Twice Daily

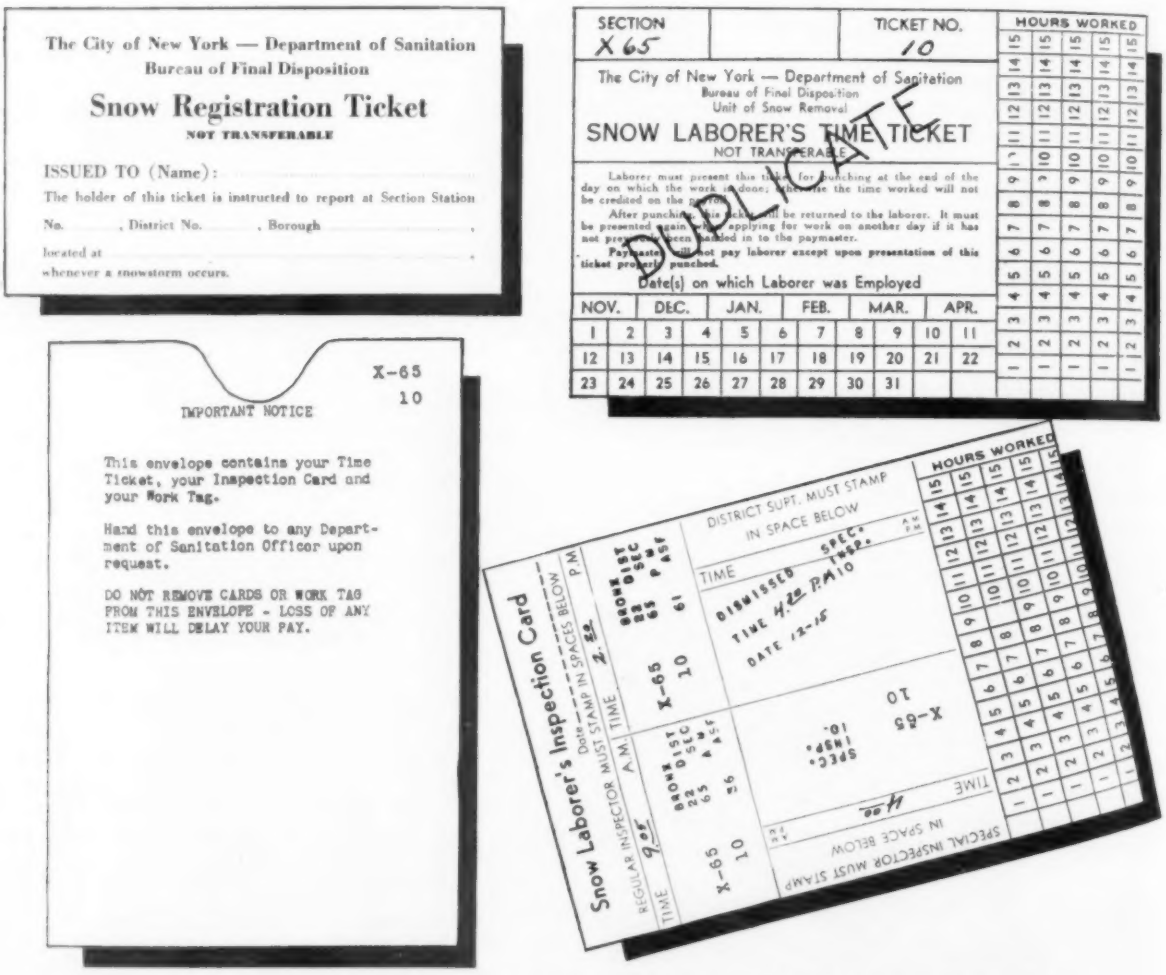
In the afternoon, a similar inspection was made, but with another plate embossed the same as before, with the replacement of "P.M." for "A.M." and a different inspection number. After the completion of the P.M. inspection, these plates were also turned in and collected by a headquarters messenger, so that they could not be used again during the storm.

A special flying squadron of fifteen inspectors canvassed the city daily, double-checking on the regular inspectors. These men were also equipped with a Speedaudresser and a special inspector's plate, and made a similar check on

every laborer in the gangs visited, imprinting the inspection card in the space for the special inspector's imprint.

At the completion of the day's work, the laborer turned in his Inspection Card, and if he had been properly inspected in both A.M. and P.M., the figure "10" under "Hours Worked" on the card was punched, designating a full day's pay due that employee. If a late start had been made or another cause shortened the number of hours worked, this figure was reduced.

The Snow Laborer's Time Ticket was also punched with the date and the hours worked, and returned to the laborer, and was presented again by him when he reported to work on another day.


The City of New York — Department of Sanitation
Bureau of Final Disposition
Snow Registration Ticket
NOT TRANSFERABLE
ISSUED TO (Name):
The holder of this ticket is instructed to report at Section Station
No. , District No. , Borough
located at
whenever a snowstorm occurs.
SECTION X 65
TICKET NO. 10
HOURS WORKED
The City of New York — Department of Sanitation
Bureau of Final Disposition
Unit of Snow Removal
SNOW LABORER'S TIME TICKET
NOT TRANSFERABLE
DUPLICATE
Laborer must present this ticket for punching at the end of the day on which the work is done; otherwise the time worked will not be credited on the payroll.
After punching, this ticket will be returned to the laborer. It must be presented again when applying for work on another day if it has not previously been handed in to the paymaster.
Paymaster will not pay laborer except upon presentation of this ticket properly punched.
Date(s) on which Laborer was Employed
NOV. DEC. JAN. FEB. MAR. APR.
X-65 10
IMPORTANT NOTICE
This envelope contains your Time Ticket, your Inspection Card and your Work Tag.
Hand this envelope to any Department of Sanitation Officer upon request.
DO NOT REMOVE CARDS OR WORK TAG FROM THIS ENVELOPE - LOSS OF ANY ITEM WILL DELAY YOUR PAY.
Snow Laborer's Inspection Card
DISTRICT SUPT. MUST STAMP IN SPACE BELOW
REGULAR INSPECTOR MUST STAMP IN SPACES BELOW
SPECIAL INSPECTOR MUST STAMP IN SPACE BELOW
HOURS WORKED

FORMS USED BY THE DEPARTMENT OF SANITATION, NEW YORK CITY, LAST WINTER FOR CHECKING THE TIME OF TEMPORARY LABOR EMPLOYED ON SNOW REMOVAL

Inspection Cards Rapidly Audited

From the daily Inspection Cards a complete audit was rapidly and accurately made of the cost for each gang of emergency laborers, and the total cost of emergency laborer employees. These forms were used as a basis for paying the employees, agreeing with the figures punched on the Snow Laborer's Time Ticket, which also acted as a laborer's receipt for time worked.

The first storm of last winter started on December 14, and the snow was entirely removed by 4:00 P.M. on December 16, with the exception of flushing loose snow on a few of the side streets. The portable inspection machines were exposed to the weather, which included rain, hail, snow and sleet, and although they were in the hands of men who were using them for the first time, and although all sections were requested to send in any complaints promptly, all imprints were considered good and legible and no machine trouble was reported. In no instance was any manipulation attempted, and only in three or four cases were any discrepancies in the system found, and these were due to misunderstanding of the system, which had been installed only three days previous to the storm and announced in the form of general orders and bulletins.

12,000 Laborers Hired and on the Job in 40 Minutes

On the first morning of the storm, 12,000 laborers were ordered hired at 7:00 A.M. These 12,000 were on the street and working, with their plates, tags and cards in their possession, in all instances by 7:40 A.M., which is probably the speediest distribution of laborers in the history of New York City's experience with snow removal. No laborer lost his plate or misplaced it during the three days of the storm, which is remarkable, since every known kind of laborer was employed.

The system as outlined definitely produced more work

per man than ever before in snow-removal activities in New York City, and the audit work, completing payrolls and checking time cards for the entire force of over 30,000 hired during the three days' duration of the storm, caused by an approximate 90 per cent turnover of labor daily, was finished and made ready for payment 48 hours after the laborers had finished work, at 6:00 P.M. on the third day of the storm.

The continued success of this plan of operation was borne out in less than two weeks after its first use, when an 11-inch snowfall was cleared from the streets in an even speedier and more efficient manner.

Snow Removal in Cities—Checking Contractors' Loads

Under this heading there will appear in the September number of THE AMERICAN CITY an article describing and illustrating the features of the new system installed in New York City last winter by which many savings were effected in snow removal and the work of checking contractors' loads was greatly expedited.

Standards for Bacterial Quality of Water at Natural Bathing Places

By G. C. HOUSER
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DURING recent years much has been written on the subject of sanitation of bathing places, largely owing to the increasing popularity of artificial swimming pools and the potential danger of spreading diseases among patrons of pools which are not operated in a sanitary manner. Many states have adopted standards for the bacterial quality of water in swimming pools, but only a few such standards have been applied to natural bathing places. The following material constitutes a summary of available literature on the subjects of (a) diseases which are believed to have been caused by bathing in contaminated water and (b) standards for bacterial quality of water at bathing places other than artificial or semi-artificial pools.

Diseases Attributed to Bathing in Polluted Water

Glace reports the following diseases which have been attributed by physicians and public health officials to the use of improperly operated swimming pools[1]:

Eye—conjunctivitis
Ear—furunculosis of the external auditory organ, otitis media
Nose—rhinitis, ethmoiditis, sinus infections
Throat—pharyngitis, tonsillitis, laryngitis
Skin—impetigo contagiosa, boils, molluscum contagiosum, tinea cruris, pus infection
Intestinal—typhoid fever, dysentery

The 1929 report of the Joint Committee on Bathing Places of the American Public Health Association and the Conference of State Sanitary Engineers states that unofficial reports of the occurrence of ringworm, toe itch, toe scald, fungus foot, papilloma, and similar infections at pools and beaches in various parts of the country are becoming more and more frequent[2]. Most, if not all, of these foot diseases are caused by a fungus which is spread by infection of the floors of dressing rooms, etc., at pools, bathhouses, gymnasiums, and other places where persons go barefoot.

According to Baker, a disease virus being liberated into the water by one bather might infect another bather if the germicidal property of the chemical in the water was not sufficient to destroy it[3]. Such infections as diphtheria, tuberculosis, vulvovaginitis and some protozoal infestations are susceptible of being transmitted in this manner. Crane mentions two additional diseases contracted from swimming in polluted water, namely, grippe and gonorrheal infections[4]. To the diseases mentioned above, Bavone adds septic sore throat and eruptions[5].

An anonymous article*, published in *Beach and Pool* for December, 1931, states that skin infections which are occasionally associated with swimming baths, such as scabies and pediculosis, are probably usually transmitted by towels, costumes and seats, rather than by water[6]. The same article refers to a small epidemic of scarlet fever in a public school, which was thought to have been caused in part by infection transmitted in the school swimming bath.

The 1910 report of the Metropolitan Sewerage Commission of New York mentions the possibility of pneumonia and meningitis being water-borne diseases.

Simons presents evidence to show that eczema and mastoid infection have been contracted at bathing places[7]. An anonymous article in the *Journal of the American Medical Association* for December 21, 1929, mentions catarrhal otitis and ictero-hemorrhagic spirochetosis among the diseases which have been contracted at bathing places.[8]

Bacterial Standards for Water at Natural Bathing Places

While some authorities remain of the opinion that bathing places are not significant factors in the transmission of disease, the fact that so many different diseases have been traced by other authorities to bathing in contaminated water makes it clear that the maintenance of bathing places in a sanitary condition is important to the public health.

The 1927 report of the Joint Committee on Bathing Places of the American Public Health Association and the Conference of State Sanitary Engineers states that it is very desir-

* An extract from "The Purification of the Water of Swimming Baths," Ministry of Health, London, England.

able that the bathing waters at public bathing places on natural streams, lakes and tidal waters should be of the same standard of bacterial quality as is required for swimming pools.[10]. The standards suggested in this report are as follows:

"Bacteria Count on Agar—24 Hours—37° C.: Not more than 10 per cent of samples covering any considerable period shall contain more than 100 bacteria per cc. No single sample shall contain more than 200 bacteria per cc.

"Partial Confirmed Test: Not more than two out of five samples collected on the same day, or not more than three out of any ten consecutive samples collected on different dates to show a positive test in 10 cc of the water at times when the pool is in use."

IN VARIOUS STATES

The South Dakota State Board of Health includes the Joint Committee's recommendations in its minimum requirements for bathing places[19]. The committee's suggestions in regard to the partially-confirmed test for B.coli are followed in the regulations of the Missouri State Board of Health, but the standard for the agar count is changed by this Board to read as follows[20]: "Not more than 10 per cent of samples covering any considerable period shall contain more than 500 bacteria per cc. No single sample shall contain more than 1,000 bacteria per cc."

The 1932 report of the Joint Committee mentions the proposed California standard of 10 B.coli per cc and a standard used by the New York City Health Department allowing 30 B.coli per cc[11]. The committee alters its former viewpoint by stating that it is not considered practicable or desirable to recommend any absolute bacterial standard of safety for the waters of outdoor bathing places.

After studying the bacterial pollution of bathing-beach waters in New Haven harbor, Winslow and Moxon suggest that perhaps an average of not over 1 colon bacillus per cc with a maximum of not over 10 per cc might be a reasonable figure[12].

In an investigation of bacterial pollution at the several bathing beaches at Rochester, N. Y., Metcalf and Eddy select a criterion of 100 organisms per cc in any single sample as the limit for the coli-aerogenes group, as determined by the presumptive test[13]. They state that it seems reasonable to permit not more than approximately 5 per cent of the individual samples collected to show over 100 organisms of this type per cc.

The 1912 report of the Metropolitan Sewerage Commission of New York advances the opinion that the quality of the water in New York Harbor at points suitable for bathing and oyster culture should conform substantially as to bacterial purity to a drinking water standard[14].

The Idaho Department of Public Welfare has adopted a regulation, apparently applying to the water of all public bathing places, to the effect that the total bacterial count shall not exceed 1,000 bacteria per cc, and that there shall be not more than 100 colon bacilli per cc[15].

The Colorado State Board of Health classifies as safe, with no reasonable danger of infection, those bathing places in which the water conforms to the Joint Committee standards of bacterial quality for swimming pools[16]. The Board classifies as reasonably safe, with slight danger of infection, those bathing places in which the water meets the following standards: "Samples plated on standard agar medium and incubated at 37° C. for 24 hours will not show more than 2,000 bacteria per cubic centimeter; not more than 50 per cent of the samples covering any considerable period will show a positive presumptive test for organisms of the coli-aerogenes group in 1 cubic centimeter."

The Maryland State Department of Health, in its general suggestions on sanitary control of swimming pools and bathing places, states that "by careful operation it should be possible to keep the total bacterial count in a pool water at 100 per cc at 37° C. and less[17]. Under any conditions the bacterial count should never go above 1,000 per cc at 37° C. Colon bacilli should be absent usually in 10 cc at 37° C. of the pool water."

Bavone says that a study of state regulations throughout the country will show that the majority of such states have regulations calling for a bacteria count of 1,000 per cc with no single sample over 5,000 per cc; B.coli must not be present in more than 50 per cent of 1-cc portions examined[5]. He gives it as his opinion that these requirements should hold for natural as well as artificial pools.

Conclusion

It is evident that a variety of bacterial standards have been suggested by various authorities with respect to the water at natural bathing places. The most recently published opinion along these lines is that of the Joint Committee on Bathing Places, which states that it is not practicable or desirable to recommend any absolute bacterial standard for such waters. While it may be true that it is not practicable to set an absolute standard, it certainly seems desirable to have some scientific basis for such a standard, particularly for natural bathing places where the quality of the water can be controlled by the use of a disinfectant such as chlorine. This method of control has been exercised at Detroit, Mich., Morgantown, W. Va., Schenectady, N. Y., and Washington, D. C.[18] [21] [22].

Perhaps the most practicable method thus far advanced for dealing with the problem of bacterial standards for natural bathing places is the scheme adopted by the Colorado State Board of Health, which has been outlined above. In following such a procedure, standards may be established which will separate bathing-place waters into three classifications: those which are definitely safe for bathing; those which are definitely unsafe; and those which are reasonably safe, with slight danger of infection. Such a method of classification enables health authorities to determine where the quality of bathing-place waters requires improvement and gives them a basis for prohibiting the use of such waters, in case the necessary improvement is not effected.

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AUTHOR'S NOTE.—This article was prepared as a result of an investigation made under the direction of Arthur D. Weston, Chief Engineer, Massachusetts Department of Public Health.

Improvements in the Water Utility of Orrville, Ohio

By A. D. WEBSTER

Superintendent, Orrville Municipal Utilities

ORRVILLE, OHIO, has recently placed in commission another motor-driven centrifugal pumping unit. This has been installed in the North Vine Street pumping station, making a total of three Allis-Chalmers high-pressure pumps available for the high-lift general distribution service. The pumping costs also have been benefited quite markedly since the erection of a 275,000-gallon elevated storage tank put into service in November, 1933. The adjacent electric light plant furnishes power at exceptionally low rates, and the pumping schedule is arranged to cooperate in the use of off-peak power.

The extra bond retirements in 1929 preceded an accelerated reduction in annual interest. In addition to the erection of the elevated storage tank and the installation of the new motor-driven pumps in 1930 and 1934, improvements included new suction and discharge station headers in the renovated pump room, duplicate feed lines to the water distribution system, loop pipe lines making possible the elimination of dead ends in various parts of town, additional hydrants and main line valves, and water meter and branch service renewals. These latter now involve more expensive piping and usually some pavement repairs. An indirect factor of importance in the reduction of the costs of operating the water works has been a parallel reduction of steam and electric power costs in the associated Electric Department which have been reflected in decreased charges to the Water Department.

THE ALLIS-CHALMERS PUMPING UNITS IN THE ORRVILLE, OHIO, WATER WORKS

THE 275,000-GALLON ELEVATED STEEL TANK ADDED TO THE ORRVILLE WATER-WORKS SYSTEM IN NOVEMBER, 1933

The elevated water tank has a novel feature in the installation of a weather vane instead of the usual ball finial surmounting the conical roof of the tanks. In order to make for better appearance and proportions, the vane was mounted some 6 feet high with the vane in the customary form of an arrow measuring 8 feet long over-all. The bearing spindle and all revolving parts, except the ball bearings, were made of brass. The total weight of the weather vane is about 360 pounds. It was constructed in a local machine shop from designs prepared by a construction engineer attached to the office of the Board of Public Affairs. The elevated water storage tank was furnished and erected by the Pittsburgh-Des Moines Steel Co.

The accompanying table gives a picture of the finances of the Water Works Department from 1924 through 1933.

FINANCIAL PERFORMANCE OF WATER WORKS DEPARTMENT 1924-1933

	Receipts	Operating and Maintenance	Interest	Bonds Amortized, Depreciation Renewals, Extensions and Improv'ts	Cash Surplus Account
1924	$26,096	$25,148	$1,000	$9,635	$—7,367
1925	24,334	22,036	38	4,785	—9,892
1926	29,338	19,839	3,320	5,461	—9,175
1927	*29,029	17,610	2,890	6,575	—7,201
1928	33,890	16,766	2,460	6,823	+ 639
1929	†31,293	15,479	2,062	10,313	+4,079
1930	‡27,099	14,741	1,485	9,193	+5,759
1931	26,140	14,079	1,320	10,234	+6,267
1932	26,175	14,877	784	6,814	+9,967
1933	§23,935	13,292	426	20,895	— 713

* Rates raised Jan. 1, 1927, rate structure changed to modern form supplementing cost control.

† Rates reduced Dec. 1, 1928, on account of consistent reduction operating costs.

‡ Rates reduced Dec. 1, 1929, on account of consistent reduction operating costs.

§ Rates reduced June 1, 1933, on account of forecasted reduction due to improvements.

Stabilizing Weak Subgrades

By F. H. ENO

Professor of Highway Engineering,
Ohio State University

AN attempt has been made in Ohio to determine by experimental trial, directly upon the highways themselves, whether subgrades upon unstable soils can be stabilized by chemical and oil treatments or by thin subbase courses of various materials.

Certain chemicals flocculate the fine particles in soil, thus tending to permit percolating water a freer exit to drainage. At the same time the agglomerated masses resist deformation much more than before flocculation. Other chemicals deflocculate soils in water, separate grains into their integral parts, thus reducing pore size and increasing capillary intensity; this causes the soil to maintain a more constant moisture content and reduces the volumetric changes. Other chemicals lower the temperature at which the soil will freeze, and thus reduce the probability from frost heave. Bituminous materials and heavy oils applied as admixtures furnish more cohesion to soils, thus giving greater stability.

Porous subbases should affect the pavement in several ways. Their value may be stated as follows: They furnish additional depth of stable material beneath the pavement to transmit and distribute the traffic load over a greater surface of the subsoil; they form additional insulation against the transmission of heat and cold to the subgrade soil; they form a reservoir for extra water that inequalities in the subbase will not permit to be completely drained away, and which in freezing weather may cause some damage; they offer space for any expansion that may take place when such water does freeze; they support green concrete away from the subgrade soil and prevent the soil from pulling water from the green concrete, which would otherwise occur because of the higher capillary power of the soil over that of the concrete. Concrete, when properly proportioned, will ordinarily have enough capillarity to hold sufficient water to complete the setting and hardening of the concrete, but soils, being so much finer-grained than the concrete, have greater capillarity and will therefore rob the concrete of its required water.

Experimental Treatments

Based upon the analysis stated above, I undertook a long series of experimental treatments, beginning in 1924 and added to from time to time up until the summer of 1931. Surveys of the experimental sections have been made each year to observe what is occurring.

The materials used thus far are:

1. *Chemicals.*—Sodium chloride, calcium chloride, calcium hydrate, sodium carbonate, and sodium silicate.
2. *Bitumens and Oils.*—Cold tar, crude oil, used crankcase oil, kerosene, and Tarvia D.
3. *Admixtures.*—Lime, cement, sand, stone dust, and granulated slag.
4. *Porous Subbase.*—Sand, slag, gravel, broken stone, and cinders.

They were used under three types of roads—concrete, macadam, and traffic-bound.

There has not been sufficient evidence upon the last two types of roads to warrant any statements at this time. It is believed from the evidence thus far secured that there is hope for success for some treatments beneath macadam, black top, and traffic-bound roads. The discussion at this time will be limited to facts gathered from experiments beneath concrete roads.

Results from Concrete Roads

Eight different locations were chosen for experimental tests upon the subbase soils of concrete roads. One hundred different sections, varying from 100 to 400 feet in length, were treated, aggregating 22,892 feet in length. To check the results of these experiments, untreated sections of the same road adjacent to, and in many cases intervening between, the test sections, were set apart to be observed the same as the experimental sections. There were 38 sections of the untreated subgrades, totaling 16,392 feet in length.

The roads have been in service from two to nine years. Traffic varies considerably between the different roads, although all of them are main traffic highways, three of them belonging to the United States system. The heaviest traffic is that over State Highway No. 14 from Cleveland to Salem and points upon the river and to Pittsburgh. No traffic counts upon these roads have been made.

Under the same conditions of soil, drainage, traffic, and weather, the road longest in service should yield evidence of the greatest weight. The fact that these roads lie from the southern to the extreme northwestern portions of the state, upon different kinds of soil and under different volumes of traffic, will more or less influence the weight to be given to the data from each location. And yet there is evidence that seems to show that soil and weather conditions at the time of construction may have more influence upon the pavement than the other variables mentioned.

Summation of Experimental Work

It is doubtless understood that it was not the intention to develop a treatment beneath pavements for all soils and all road construction, but only for those stretches of pavement which may fall upon unusually bad soil conditions. No attempt has been made to date to keep a record of what the treatments cost or how much in dollars and cents value they would save if successful. The first intent was to find whether *any* treatments would improve soil condtions under normal drainage conditions, and which method and material would give best results.

As mentioned before, the time in service should have weight in judging results. Those materials having the largest amount of use, measured in this case by the linear amount in service, should have some weight, for the larger use would tend to even up the accidentals which always occur in such experiments. Methods or designs used in construction should also be considered. To illustrate, the

use of 60-foot slabs as in State Route No. 2, at Toledo, should be considered as probably causing more cracks to appear than would otherwise occur. From this discussion, it will be noted that any tabular presentation of the data collected will not tell the whole story. If each project is analyzed separately, probably the truest conclusions may be reached. For instance, when the sections in Route U. S. 50 are compared between themselves, only four sections out of nineteen show greater crack ratio than do the untreated sections. These are 6-inch gravel, 2- and 4-inch sand, and 4-inch cement-clay sections. It is true that other sections of sand, gravel, and cement-clay approach the untreated sections in length of cracks—but still they show some improvement.

Upon Route No. 14, one section of slag is excellent while three are very poor. On route No. 2 at Toledo all slag sections are very good. On U. S. No. 22 the slag sections are all good. On No. 20 in Williams County two slag sections are good and two bad. In summary, twenty slag sections show fine results and five show poor results. Stone bases are good in four out of five projects. Gravel is only fair in two out of three projects. The cement-clay admixtures are so nearly like the original soil that the results from them may be one way or the other. It would appear to be little if any improvement upon untreated subgrades. Kerosene shows good results in one place and bad in the other. Cold tar gives good results in two places and fair in the third. Cinders are of no value in the one place where they were used. Because mass evidence when averaged up does carry weight, although some of the evidence may be counter to the average the following tables are presented. The first and third tables present the results for each material and for the untreated sections collected from each project. If the tables are carefully studied, it will be seen that all treatments on some projects give very much better results than upon some other project. This may be due to soil, drainage, frost, or workmanship during construction, or to all of these elements combined. In the second table is presented a summary and comparison of each material. Each treatment with its crack ratio is compared with the crack ratio of the total untreated length of road observed, assuming 100 as a base. The relation is expressed in percentage of the crack ratio of the untreated sections. This table shows that cold tar, oils, slags, crushed stone, lime-clay admixtures and some various treatments all show better results than the untreated sections. Gravel and sand porous bases and cement-clay admixtures are worse than no treatment. Excepting those last three materials, the average of the results of the remaining materials represents 57.4 per cent of the cracking in the untreated sections.

Note that there is a large difference in results upon the untreated sections as shown in the last table.

There is not a sufficient length of time in the treatment with chemicals, oils, and admixtures, generally, nor a sufficient length of treated subbase to make it safe to draw anything but the most tentative conclusions at this time. When all these projects have been under service for ten years, all treatments may then be compared upon an equal time basis and more definite conclusions drawn.

For very bad soil and drainage conditions, or where past evidence indicates frost heave, 3- or 4-inch porous subbases of slag or crushed stone will greatly improve the condition. These bases must always be carefully drained.

RESULTS FOR EACH STABILIZING MATERIAL USED

Route	Subbase	Length	Crack Length	Crack Ratio	Per Cent of Untreated
50	Slag	494'	351'	0 734	101 2
14	"	720	459	0 637	87 9
2-Lucas	"	1,080	154	0 142	19 6
20	"	1,075	360	0 335	46 2
22	"	1,170	80	0 068	9 4
	Total slag	4,539	1,404	0 309	42 6
32	Stone	980	796	0 812	112 0
14	"	400	186	0 465	64 1
2-Lucas	"	720	241	0 334	46 1
20	"	1,225	747	0 610	84 1
22	"	600	60	0 100	10 8
	Total stone	3,925	2,030	0 517	71 3
32	Lime-clay	500	392	0 784	108 1
20	" "	300	278	0 927	127 9
22	" "	300	20	0 067	9 2
	Total lime-clay	1,100	690	0 627	86 5
50	Cem.-clay	502	745	1 683	232 1
32	" "	600	513	0 855	117 9
	Total cem.-clay	1,102	1,258	1 141	157 4
50	Gravel	505	682	1 349	186 1
32	"	620	560	0 903	124 5
14	"	400	219	0 547	75 4
	Total gravel	1,525	1,461	0 957	132 0
2-Lucas	Cold tar	360	104	0 289	39 9
20	" "	300	125	0 417	57 5
22	" "	300	40	0 133	18 3
	Total cold tar	960	269	0 280	38 6
20	Oils	1,200	525	0 437	60 3
22	"	900	120	0 133	18 3
	Total oils	2,100	645	0 307	42 3
50	Sand	1,285	1,636	1 273	175 6
32	4" tile	400	332	0 630	114 5
14	Hard cinders	480	324	0 675	93 1
20	Beet lime	300	112	0 373	51 4
20	$CaCl_2$	300	169	0 563	77 6
22	Stone dust	300	20	0 067	9 2
20	"	300	242	0 807	111 3
	Various	2,080	1,199	0 576	79 4

SUMMARY AND COMPARISON OF EFFECTS OF STABILIZING MATERIALS

Subbase	Length	Length of Cracks	Crack Ratio	Per Cent of Untreated
Cold tar	960	269	0 280	38 6
Oils	2,100	645	0 307	42 3
Slags	4,539	1,404	0 309	42 6
Stones	3,925	2,030	0 517	71 3
Various	2,080	1,199	0 576	79 4
Lime-clay	1,100	690	0 627	86 5
Untreated	11,597	8,406	0 725	100 0
Gravel	1,525	1,461	0 957	132 0
Cem.-clay	1,102	1,258	1 141	157 4
Sand	1,285	1,636	1 273	175 6
All treated except 3	15,004	6,237	0 416	57 4
All treated	18,616	10,592	0 569	78 5
All untreated	11,597	8,406	0 725	100 0

RESULTS ON UNTREATED SECTIONS

Route	Subbase	Length	Length of Cracks	Crack Ratio	Per Cent of Untreated
50	Untreated	2,087	3,436	1 647	227 1
32	Untreated	2,430	2,218	0 913	126 0
14	Untreated	1,340	883	0 660	91 0
2-Lucas	Untreated	860	399	0 464	64 0
22	Untreated	2,660	473	0 178	24 5
20	Untreated	2,220	997	0 499	68 8
	Total	11,597	8,406	0 725	100 0

ACKNOWLEDGMENT.—From a paper presented at the Twentieth Annual Purdue Road School.

$100,000 to National Power Policy Committee

ALLOTMENT of $100,000 to the newly appointed National Power Policy Committee for necessary expenses has been announced.

The Committee, of which Public Works Administrator Harold L. Ickes is Chairman, was created by the President. Its duties will be to develop a plan for the closer cooperation of the several factors in electrical power supply both public and private, whereby national policy in power matters may be unified and electricity be made more broadly available at cheaper rates to industry, to domestic and particularly to agricultural communities.

Refuse Incinerator Built as CWA Project

By **CARL SCHNEIDER**

Mechanical Engineer, Division of Public Works, New Orleans, La.

THE city of Gretna, La., population 12,000, a neighboring community of New Orleans, is now operating a small high-temperature incinerator which was constructed as a project under the United States Civil Works Administration. For a number of years the problem of better refuse disposal had been confronting the town; dumping had been a continual source of complaints, and the cost of disinfectants to overcome odors at the dumping grounds had amounted to an appreciable item in the cost of the refuse collection service. The Mayor and the Board of Aldermen were advised of the unusual opportunity presented by the CWA as a means of acquiring the much-needed incinerator. They were quick to realize the splendid investment which the town could make in its local contribution for materials, professional services and special equipment. So, an application was prepared for the project.

Work was begun in January 19, 1934, and completed on April 25, 1934. In the early stages of the work, progress was delayed by weather conditions. Later obstacles to progress were the delay in securing certain materials, the reduced hours of the workmen, and the fact that only a limited number of skilled mechanics were available to carry on the work.

Maximum Labor Employed

In the construction of the plant, provision was made for utilizing the maximum amount of labor on the job. Materials were secured involving the least amount of factory costs, and the work of "manufacture" was done right on the job. Patterns were made for the castings; all structural steel was fabricated on the job; window frames were constructed in the field; and even the blast gates for air admission were constructed with only hand tools. It was verily a "Robinson Crusoe" job. The acetylene torch was very much in use, and it was aided in the work on steel by the electric drill, screw punch, lever punch, hack saw and chisel. Considering the lack of real shop tools and facilities, a very creditable job was done by the crew. Furthermore, every employee on the job took a keen interest in the work and it is believed that their application was much higher than on most CWA projects.

INTERIOR OF THE GRETNA INCINERATOR
Constructed as a CWA project

EXTERIOR OF THE NEW INCINERATOR AT GRETNA, LA.

The Building and Furnace

The building is of frame construction with corrugated galvanized iron roof and siding. It is 30 feet wide and 36 feet long, and the height to eaves is 12 feet above the floor. A sliding door, 8 x 10 feet, in the front end admits the collecting carts. Ample light and ventilation are provided by windows and doors. The chimney, of square section, common brick exterior and lined with firebrick, is 3 x 3 feet inside and 30 feet high. The chimney and furnace are on a reinforced concrete slab foundation. The concrete footings of the building walls are not reinforced.

The furnace is of box-like appearance; the outside dimensions are 10 feet wide, 12 feet long and 9 feet high. It has a 10-gage sheet steel casing and is lined with 9 inches of firebrick. The flue is of common brick exterior, with 6¾-inch firebrick lining and 9-inch firebrick sprung arch. The furnace is equipped with a flat arch supported on the structural members of the steel casing. Hot forced draft is supplied through a system of ducts and an air preheater of ten 3-inch cast iron tubes, located just beneath the flat arch. A direct-connected motor-driven fan draws air from the room and discharges through the tubes and ducts to the ash-pits, blast gates being used to control the supply to the two separate cells.

There are two firing cells, set back-to-back in the forepart of the furnace. The grate surface of each cell is approximately 15 square feet. A large cast iron door, refractory lined and counterweighted, permits the periodic removal of ashes. A smaller door in the top of the large door permits the entrance of stoking tools for spreading the refuse. A 2-inch pipe across the front of each of the cells provides a rest for the hoe in removing ashes and a means for holding the clinker door tight against the furnace casing.

The furnace is charged through the end, upper portion, by means of a skip which is elevated by an electric hoist operated from the floor by rope control. The charging bucket has a capacity of nearly ½-cubic yard. A counter-

weighted charging door is provided to prevent excess air admission to the furnace. It is refractory lined and has an air space to prevent the wet garbage in the hopper from damaging the refractory lining.

COST OF CONSTRUCTION

Material furnished by city				$1,103.40	
Material furnished by CWA				2,500.00	
Equipment furnished by city				445.27	
Supervision and engineering				725.00	
Total				$4,773.67	$4,773.67
Labor	7,171	hours	@ $ .40	$2,868.40	
Carpenters	872	"	" .80	697.60	
Pattern makers	362½	"	" 1.00	362.50	
Foremen	368	"	" .50	184.00	
Timekeeper	368	"	" .50	184.00	
Watchmen	1,526	"	" .30	457.80	
Iron workers	616	"	" 1.25	770.00	
Iron worker helpers	320	"	" .85	272.00	
Mortar mixers	682½	"	" .40	273.00	
Hod carriers	984	"	" .40	393.60	
Bricklayers	560	"	" 1.00	560.00	
Millwright	278	"	" .75	208.50	
Tinsmith	82	"	" 1.25	102.50	
Painters	96	"	" 1.00	96.00	
Sheet metal workers	86	"	" 1.25	107.50	
Electrician	39	"	" 1.25	48.75	
Cement finishers	16	"	" 1.25	20.00	
Total				$7,606.15	7,606.15
Total cost					$12,379.82

Operation

Refuse is delivered by dump-carts, which unload directly on the floor, and the material is shoveled by hand into the charging skip. The production of refuse amounts to only five to eight 1 1/3-cubic yard loads per day, or 2 to 3 tons. The plant capacity is designed for ½- to 1 ton per hour, based on the character of the material and particularly its moisture content. In the short time the plant has been operating it has demonstrated its ability to easily burn the refuse collected.

During one week of operation, when the refuse was not affected by rain, one ton of coal was consumed and an average of 7 kwh per day for power. Recently a rainy spell has indicated the need for more fuel with very wet garbage.

The plant was arranged for operation by one man, and it is believed that its unique construction will permit entirely satisfactory operation with a minimum of expense for labor, fuel and power. Since the amount of material to be burned is so small, the maintaining of high temperatures in the combustion chamber is not quite practicable. The best indication of satisfactory combustion is the almost entire lack of smoke from the chimney. No temperature or draft instruments were installed, but it is easy to determine that the forced draft reaches a temperature well over 200° F.

COST OF OPERATION

May, 1934

Amount of garbage burned	272 yds.
Coal used	$ 31.00
Electric power used	3.29
Labor	114.80
Total	$149.09
Per yard	$ 0.54

June, 1934

Amount of garbage burned	270 yds.
Coal used	$ 40.50
Electric power used	8.30
Labor	102.40
Total	$151.20
Per yard	$ 0.56

J. G. Scheib, CWA Administrator for the parish of Jefferson,, considered the project one of eminent importance in the parish, and his special cooperation aided materially in the prosecution of the job. The author prepared the application for the project with all data necessary, furnished all drawings required as the work progressed, and made frequent inspections during construction. J. C. Daul, City Superintendent of Gretna, also gave much time to field supervision of the work.

Why Does Coal Smoke?—And What Does Smoke Cost?

OCEANS and fogs of information have been produced on the subject of smoke pollution, and at the annual convention of the National Smoke Prevention Association on June 19, R. M. Conner, Director American Gas Association Testing Laboratory in Cleveland, summed up the evils, real and alleged, of the 125 to 1,900 tons per square mile that hangs over cities.

These evils are esthetic, physiologic and economic, and are intermixed. Not only is one-sixth of the visible light screened out of New York and Baltimore, but the ultra-violet rays, which activate the vitamin D in the skin and are said to do much toward preventing common colds, are excluded to an even greater degree. Dull days make people, including clerical forces, irritable, and smoke makes dull days duller and takes some of the sheen off bright days. Any agency that is capable of crumbling a skyscraper and withering a tree, may be said to admit of some harm, at least, to the human anatomy.

On the economic side, there is a bill of $15 per year per capita for super-washing, dry-cleaning, painting, and repairs to buildings and furnishings. This is said to total $2,400,000,000, and would be quite a sum, not only to prorate back into the pockets of city dwellers but also to subtract from the present incomes of laundries, dry-cleaners, and the makers and sellers of products that soil in the presence of smoke. Thi saspect is important, inasmuch as Mr. Conner's basic solution is an aroused public opinion demanding an abatement of the nuisance.

What is smoke? It is the result of incomplete combustion, and where combustion is carried on under ideal conditions, there will be practically no smoke. It is therefore the flag of inefficiency. But it is more than that: it is the sign of a wrong process. No smoke hangs over the plants of the Koppers Co., whose business is to treat coal as a raw material in which many useful products are stored. When these products have been removed, a fuel remains.

To regard coal as merely a fuel is as uneconomic as to regard iron ore as merely an excellent material for making fills. Coke is fuel and slag is fill. Gas and electricity are fuels. Coal is combustible but it is also a source of ammonia, tar, dyes, perfumes, drugs, just as iron ore is potential nails and battleships. Here is the real economic waste, and just as soon as the facts can be presented in such a way that investors, financiers and industrial leaders can visualize this waste as wasted profits that could go into their pockets and thence to the bank instead of to the dry cleaner, the problem will be solved on an economic basis.

$600,000,000 of Water and Sewer Projects

are construction possibilities when, if and as financed. This is the approximate value of the remaining projects of the survey made by the National Recovery Committee for Water Works Construction of the American Water Works Association, dated January, 1934. This survey with its billion-dollar prognostication, though regarded as conservative by the Committee, seemed very optimistic. Yet seven months later, 40 per cent of the program either is financed or financing has been applied for. Need was shown for 2,878 water-works projects worth $555,847,070, and 1,893 sewer jobs worth $464,146,670. Prospects were heaviest in New York, California, Illinois, New Jersey, Michigan, Pennsylvania; the total for these six states was $556,000,000, or 55 per cent of the grand total. Address THE AMERICAN CITY for further information about this list of unfinanced but increasingly timely projects.

From the Institute of Public Affairs

With evening lectures and morning and afternoon round table conferences on a wide variety of political, economic, civic and social-welfare problems, the Institute of Public Affairs of the University of Virginia held its annual two-weeks session at Charlottesville last month. From the prepared papers the following excerpts have been culled as of special interest to readers of THE AMERICAN CITY.

Making the Cities a Scapegoat

WHEN things go wrong, it is the old-fashioned American custom to seek at once some object, or objects, for some good, all-round, two-fisted and generous criticism. Our cities were the first recipients of the critical barrage. Later the unhappy company had been increased by the addition of practically every phase of business endeavor. In no time at all the names of our cities became bywords in all circles. "Mismanagement," "graft," "inefficiency," were hurled at them to a point where the average citizen, no matter how intelligent his grasp of municipal problems, was rapidly persuaded to the belief that there was nothing good in any municipal management. We who were engaged in this dubious occupation of city management saw the crash of financial houses, the announcements of far-reaching receiverships, the exposé of crookedness in a great international industry, the defaulting of interest and the passing of dividends that were hoary with uninterrupted age. We did not cry "Mismanagement, inefficiency, corruption and extravagance." Perhaps we understood. Perhaps we saw the fallacy, not to say unfairness, of parading a few outstanding examples of mistakes and wrongdoing—whether in the administration of public or of private affairs—to the end that there might be created the impression that all public and all private affairs were dishonestly and incompetently handled.

WILLIAM B. HARRISON,
President, Louisville Industrial Foundation, and former Mayor, Louisville, Ky.

The Need for County Consolidation

IF THE people of the several states expect any relief from the growing tax burdens, they must simplify their forms of local governmental structure. Since the county, in many states, has sunk to comparative insignificance, it might be well for both the county and the taxpayers to seek some adjustment of county forms and areas to meet modern conditions; in so doing governmental costs will undoubtedly be reduced. . . .

The average state has about 60 counties of about 600 square miles, and a population of some 20,000 people each. Under modern conditions county government should function more satisfactorily in an area with a population four or five times as large as the present average unit. These small units served the ends of public convenience in the early days of our governmental development. It was desirable that every citizen be within at least a day's journey of his county-seat, traveling by horse and buggy. Under modern conditions what was once a day's journey has been reduced to a half-hour's ride. Any citizen today, traveling by automobile, can reach the average county-seat from any place in the county in less than one hour, and in most cases in half that time. If the rule-of-thumb method of drawing county boundary lines so that a resident may drive from his home to his county-seat and return within the period from daylight to dark should be used today, we should necessarily have radical changes in county areas. . . .

Despite the opposition of local politicians and the intense local pride of county residents, absolute necessity for the reduction of governmental costs is facing many of the counties of several states, and slowly but surely we are coming to consolidation as a remedy for our county situation. Consolidation may come in the territorial form, although it is more likely that the functional approach will prove the most practicable. But, regardless of form, if I may be so bold as to prophesy, consolidation is coming. After all, the taxpayers are the ones to be consulted on this matter, and if they can be persuaded that a reduction in the number of counties or an enlarging of local units of administration means an enormous saving in the cost of government with a more efficient administration, there can be no valid reason why consolidation or functional realignment will not be used.

JOHN W. MANNING,
University of Kentucky, Lexington, Ky.

Improving County Charters

IT IS generally agreed that the county commissioners should be elected by the people and should then appoint all department heads, with perhaps one or two exceptions. It seems to be thought generally that their administration should be through an executive either working under their direction or more independent, like a city manager.

It seems to be generally agreed also that for unincorporated territory, county commissioners should have ordinance powers which would enable them to regulate building construction, sanitation, dance halls and theaters, and other matters requiring local supervision.

The most important thing in our view is to recognize that we must provide models and legislation, not only for those communities which are farthest advanced in the development of good government, but also for those communities which have had no opportunity to observe what better forms and expert administration can accomplish in the reduction of their tax bills and in the furnishing of better service. We are proceeding in Ohio on the basis of education and evolution. We believe in enthusiasm and demonstration of what can be done even if progress seems slow at first.

CHARLES P. TAFT,
Cincinnati, Ohio.

Demolition of Obsolete Housing

THE Federal Emergency Relief Administration has authorized demolition programs and will contribute funds for local relief to assist in such work. The method suggested is to secure permission of the owner to demolish his obsolete property without cost to him. By a simple interchange of letters the owner will transmit ownership of the building to a public group which should organize itself as a wrecking company using relief labor. Such material as is salvaged is disposed of to the Division of Subsistence Homesteads, to self-help or cooperative associations of unemployed, or to other relief projects. The entire procedure has been worked out by the Relief Administration, and full information can be obtained from them. Such a program is now actively under way in Chicago under the Metropolitan Housing Council, who, I am sure, will be glad to send to any of you who is interested full information as to their procedure. Further information may also be obtained from the National Association of Housing Officials. I strongly recommend that you investigate fully the opportunities for removing from your communities obsolete dwellings which are today breeders of disease and menaces to public safety.

LAWRENCE V. SMITH,
Secretary, Delaware State Board of Housing.

Planning for Wise Spending

TIME programming of public works has been suggested from time to time during the last few years as a weapon in the control of business cycles. It is therefore appropriate in a period of recovery to prepare for tomorrow and to try to sift the various projects for public construction, judging as to their real utility and value. It is wise to make some new effort to time the period of construction so as to avoid over-burdening our people with debt or prevent future use of public works as a method of filling up the sag of construction business in times of depression. It seems probable that during the next ten years public agencies will spend over twenty-five billions of dollars for public works. Surely it is not unreasonable that we should spend some time, money and thought on seeing to it that money shall be wisely spent on useful projects at the right times.

CHARLES W. ELIOT, 2D,
Executive Officer, National Planning Board.

The Field of State Planning

IN organizing the staff of a state planning board, we must consider the way in which the field of state planning breaks down into its several elements. It should be emphasized here that not physical planning alone, but primarily social-economic planning, is the purpose around which this work revolves. We are planning for economic security and opportunity for increasing the high standard of living, for the upbuilding of wise social institutions including the institution of government itself, and for sound physical development. For the work now under way, one state plannng project divides itself logically into the following segments: population distribution and trends; economic status and programs for economic security; health, safety and the welfare institutions; education facilities and services; rural land use planning, agriculture and forests; mineral resources and power; the utilization of water resources, sanitation; industry and its distribution; transport; outdoor recreation; local planning and housing; public works and public works programming; taxation and government.

JACOB CRANE,
Planning Consultant, Chicago; Consultant on State Planning, National Planning Board.

Real Value from the Tax Dollar

LOOKING to the future, as time goes on and other economies in operation are made and as tax collections improve, it would seem that the tax rate on property would eventually almost disappear, but I doubt very much if this will come about, for the reason that the taxpayers themselves will prevent it by insisting on more extensive public services. For instance, several areas in the county which are thickly built up and are quite urban in character will demand adequate fire protection by the creation of fire zones.

Additional police and modern police equipment will also increase governmental expenditures for this very necessary purpose.

Requests are heard from time to time for street lighting in the urban areas of the county, and the need for proper recreational facilities is becoming increasingly apparent.

The action of Sandston and Highland Springs, two unincorporated towns in the county, in voting bonds for water and sewer systems indicates public recognition of the necessity of these facilities to urban existence, and other areas are likely to demand similar service.

There is probably no service which would be welcomed more generally than that of adequate refuse collection and disposal in the several urban areas in the county.

However desirable these services may be, all of them cost money, and it is not possible to eliminate taxation and at the same time extend and increase the governmental services to the locality. Nevertheless, I will hazard the guess that, following the adoption of either of the optional forms of county government and its successful operation, the taxpayer will decide his tax dollar represents the purchase of more real value than any other community or service in his personal budget, and will only be restrained in his requests for more extensive public services by the return of general prosperity and his ability to pay.

W. F. DAY,
County Manager of Henrico County, Richmond, Va.

Local Taxes and Federal Aid

MUNICIPALITIES have been forced into a needlessly suppliant attitude towards the Federal Government in some states—and are in danger of being so forced by the 1935 legislatures in other states—through the adoption, at the behest of selfish interests, of shortsighted tax-limitation laws. If the present campaign of the National Association of Real Estate Boards should succeed, there will be foisted on the municipalities of every state drastic constitutional limitations on real estate taxation. If such tax-limitations were restricted to buildings and other improvements, and if the municipalities were left free to tax for public purposes the community-created land values, the results would be beneficial. But for local governments to ask Federal aid in the financing of public works which will increase or stabilize land values, and then to acquiesce in legislation which will divert such values into private profits, is a procedure so inequitable as to demand that it be checked by Federal action.

There is excellent precedent for such action in the fact that Congress last month, in appropriating funds for Federal-aid highways, put itself on record as opposed to the diversion of gasoline taxes and motor fees to other than highway purposes. As outlined editorially in *Engineering News-Record* for June 21, "Congress has gone on record in this act as believing that 'it is unjust to tax motor-vehicle transportation unless the proceeds of such taxation are applied to the construction, improvement or maintenance of highways.' Then, to give concrete form to this view, it provides that after June 30, 1935, 'Federal aid for highway construction shall be extended only to those states that use at least the amounts now provided by law for such purposes in each state from state motor-vehicle registration fees, licenses, gasoline taxes and other special taxes on motor-vehicle operators and owners . . . provided that this shall not operate to deprive any state of more than one-third of the amount to which it would be entitled.' Thus, in plain language the states are told that Congress opposes diversion of gas taxes from highway purposes and that they have one year in which to eliminate existing diversions that are not clearly within the limits set by state law. Further, by tying the provisions of this act to provisions of existing state laws, states are kept from legalizing existing diversions or from making larger diversions possible by new laws."

Similarly, my present suggestion is that the next public works appropriations act might well include a section wherein Congress would enunciate the principle that, in allocating future loans and grants for local public works or housing, preference shall be given to states which do not deliberately curtail their ability to recover, through taxation, the added values created by governmental expenditures.

HAROLD S. BUTTENHEIM,
Editor, THE AMERICAN CITY.

Democracy and Leadership

"I agree with you that there is a natural aristocracy among men. The grounds of this are virtue and talents. The natural aristocracy I consider as the most precious gift of nature, for the instruction, the trusts and the government of society."

—*Quoted by* HARRY ELMER BARNES *at the Institute of Public Affairs from a letter written by Thomas Jefferson to John Adams in* 1813.

FORWARD STEPS

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

Beauty-Spots in a South Jersey Park

TRENTON, N. J.—Parvin State Park, administered and maintained by the State Department of Conservation and Development, is a most popular recreation area and is the only state park in South Jersey. Thousands of out-of-door pleasure-seekers have used and enjoyed its lake and beautiful groves, and through the Civilian Conservation Corps new spots of scenic beauty and larger and better facilities for boating, bathing, picnicking and hiking are being developed.

A unique feature of these improvements is the boat landing and picnic area developed on the upper reaches of the stream. This place is approachable only by boat or canoe. Here, on high ground, a beautiful picnic spot has been made, and a beach constructed for the landing of water craft. A number of dead falls have been removed from the stream to provide safe navigation.

PLAZA AND LAGOON AT MAIN ENTRANCE TO PARVIN STATE PARK, NEW JERSEY
Constructed from a swamp

At another landing, a solid oak bulkhead 70 feet long has been provided for boats. Here one may enjoy a delightful picnic lunch. Several hiking trails are under construction from this point, and they are especially designed to open up

SCENES IN PARVIN STATE PARK
1. Some of the CCC boys who are doing the work. 2. Swamp transformed into an attractive lagoon and skating pond. 3. Muddy Run Stream runs through the park and has been cleaned out for boating. 4. A trail opened through an interesting cedar swamp

new beauty-spots and provide a safe way through a cedar swamp. A shelter will be built at this place, and a new park road will cross the stream within 100 yards of the dock.

The photographs show some of the workers and what they have done.

CHARLES P. WILBER,
Chief, Division of Forests and Parks, N. J. Dept. of Conservation and Development.

Milwaukee's Plan for Condemnation of Insanitary, Unsafe and Dilapidated Buildings

MILWAUKEE, WIS.—From January to April of this year, the Milwaukee Department of Building Inspection conducted a survey whose purpose was the adoption of a comprehensive plan of condemnation and demolition of unfit buildings in the city. The information sought included the location of these buildings on lots and within blocks, their physical and sanitary condition, occupancy and use, number of persons housed within, sanitary facilities provided, legal and illegal rooms in use, and open spaces surrounding each building. With this information on file, the Permit Division of the Department would be sure of the legality of permits issued for occupancy and use, and repairs and alterations.

It seemed wise not to attempt to survey the entire 2,200 city blocks that constitute the fire areas—business, commercial and light manufacturing and industrial zoned districts—and the work was limited to the most congested district, about 1,028 blocks, containing 17,759 frame buildings. It has been considered that frame buildings, and the living conditions within them, constitute the greatest evil, both from a health standpoint and as a potential fire hazard.

On this work, 52 architects and engineers were employed under the CWA. Of the 2,659 frame buildings reported on, 26 per cent were on wood post foundations; 17 per cent were directly on the ground, with no foundations, and 57 per cent were on masonry foundations; 804 buildings were found subject to condemnation orders and demolition thereafter. In the 1,779 housing units found, 51 had no sanitary facilities whatsoever; 36 per cent of all bedrooms in use were illegal, being less than 80 square feet; 50 per cent of all housing units had no bathtubs; 10 per cent of the families housed in these buildings use water-closets jointly with other families. Of the 233 vacant housing units reported on, 36 had no toilet facilities; 156 had no bathtubs; 40 use water-closets jointly with other families; and out of a total of 508 bedrooms, 185 are illegal.

Condemnation proceedings under the city's police power and state statutes will have to be resorted to in practically every case. The procedure that is being followed in Milwaukee is outlined and explained on page 62 of this issue.

During the first six months of 1934, 113 dwellings, and 239 commercial buildings, have been razed, a total of 352. On June 30 there were 108 additional buildings under condemnation, with orders issued for their demolition. It is our desire to increase the number of buildings under condemnation to approximately 200 as a constant figure, thereby increasing the number of buildings razed each month.

LEON M. GURDA,
Inspector of Buildings.

Low-Cost Housing Exhibit in Preparation

A LOW-COST housing exhibit will be held at the New York Museum of Modern Art during the period between October 15 and November 15. This exhibit will be devoted to showing American and European housing developments which meet the requirements of low rentals. There will also be shown in graphic form such evidence as has been made available in recent years which may be used in developing a foundation for a low-rental program in the United States. The exhibit is held under the auspices of the New York City Housing Authority, the Welfare Council of New York, the Lavanburg Foundation, and other agencies, including the Museum of Modern Art.

For information address Carol Aronovici, Chairman, 302 East 35th Street, New York, or Mrs. Alice F. Rothblatt, Welfare Council, 122 East 22d Street, New York.

Dallas Decides That Excessive "Economy" Is Extravagance

"PENNY-Pinching Policy of City to Be Abandoned in Favor of Wise Spending." Under this five-column head some weeks ago, the *Dallas Journal* carried a story of changing sentiment in the Texas metropolis towards extreme budget-slashing. The first paragraph read:

"Rigid economy, which has been the slogan at the City Hall for four years, at the expense of many needful municipal services, will be abandoned during coming months in favor of a program of spending designed to bring street paving, storm drainage, ... and other items back to a level more acceptable to taxpayers.

In response to an inquiry from THE AMERICAN CITY for further details, the following letter, dated July 3, 1934, has been received from City Manager John N. Edy:

"When the present council-manager government was inaugurated in May, 1931, most of the departments were overmanned, and the city had, for a number of years, been spending at a rate of approximately $600,000 a year in excess of its income. Our first year's operations reduced expenditures by approximately $1,000,000, and at the same time increased the service and efficiency of the organization. After three years' experience on this job, it is my belief that the level of service and expenditure reflected in the first or 1931-32 budget represents the minimum desirable and safe program for this city.

"In 1933 the City Council reduced the assessed valuation of real property by 15 per cent, and this reduction, plus a substantial loss in personal property valuation through shrinking inventories, cost the tax roll $42,000,000, which, at our tax rate, was equivalent to about $1,000,000 in income.

"Beginning about 1928 the city embarked upon a long-time improvement program involving a city expenditure approximating $24,000,000. The committee of citizens which recommended this program also recommended a means of financing the increased debt service. From 1928 to date, bonds have been issued and proceeds expended almost exactly in accordance with the program, but at no time has the plan originally intended to finance the spending program been made effective. Of course the issuance of improvement bonds from time to time over the past six years increased the city's debt service, and thereby absorbed an increasing proportion of total tax income. The net result of this trend has been a continuous reduction of resources available for general operations of the government over the past three years until, at the time of the publication of the news story which you mentioned, the outlook for maintaining a decent standard of service and for financing certain necessary improvements was very discouraging.

"The Council action which inspired this news story related to the purchase of a considerable tract of land for beautifying the approach to a fine underpass project which is being built in the city with Federal and city money. When the Council made this decision, realizing that a large part of the proposed land purchase was desirable but not necessary, I interpreted it as ending the rigid retrenchment program which we had followed for some time. That this interpretation was correct is evidenced by the fact that the Council recently approved my request for additional general revenue in amount of $360,000 in order that the needs of operating departments for next year might reasonably be met.

"There is a lesson in our experience that may be valuable to other cities: The 15 per cent tax reduction was put into effect quickly and without protest, and without any commitment on the part of the city as to whether or when the original values would be restored. Just recently, however, when the Council cast about for means of providing some additional revenue as above mentioned, it was discovered that the old valuations could not be restored without following a procedure so technical and long drawn out that it could not be used as a means of increasing revenue for next year's budget. Thus it appears that to reduce municipal revenues is one thing, but to restore them to a level necessary to meet reasonable needs is 'something else again.'

"I am glad to say that our tax collections are exceeding our estimates. We will collect this year 86 per cent of our current roll, and will expect to collect at least that percentage of next year's roll. It has been gratifying indeed to see our tax collections hold up during the entire depression."

Getting Rid of Unfit Buildings in Milwaukee

By LEON M. GURDA

Inspector of Buildings, Milwaukee, Wis.

1. *Policies governing building-condemnation in Milwaukee.*—Being conscious of the possibility of encountering all manner of contingencies, we have been guided in this work by the following policies:

(a) Avoiding mass condemnation at one time in any one block.

(b) Avoiding numerous condemnations at one time in any one ward.

(c) Avoiding court action in obstinate cases, by granting an owner an extension of time, not to exceed ninety days, within which time compliance with our orders is expected.

(d) Avoiding court action in cases where the owner has retained an attorney, by compromising to extend the time beyond the ninety-day limit, but only upon stipulation in court that the city have permission to raze the building if the owner fails to do so before the expiration of the additional time stipulated. This applied only to buildings which have not been classed as unsafe.

(e) Tolerating such frame dilapidated buildings within "fire areas" which are not deteriorated in excess of 50 per cent of their replacement value, until they come within the scope of the regulations of Sec. 28, 183, 351, 352 and 353, at which time condemnation proceedings are begun.

(f) Each action taken under items (c), (d) and (e) is followed prior to the expiration of time.

All our experience in this work has shown that without a definite policy such as that outlined, much confusion would have taken place and the results obtained would have been insignificant.

2. *The determination of the status of a given building* and the correct application of our laws.—The general rule which should be followed, and which we believe the courts would sustain, is that dilapidated and insanitary buildings where the cost of repairs exceeds 50 per cent of the entire replacement cost of the building (exclusive of good masonry foundations) are beyond reasonable repair and should be ordered razed. This rule applies only to a building of a type of construction which is not permitted in the area where it is located.

(a) Determine by inspection of the building whether it is:

(1) Dilapidated beyond reasonable repair, insanitary and unfit for human habitation, and located in a fire or residence area.

(2) Dilapidated and insanitary and unfit for human habitation, but not beyond reasonable repair, but located in a fire or residence area.

(3) Structurally unsafe and beyond reasonable repair, in any area.

(b) Records of inspections of buildings as set up in paragraph (a) should consist of the following:

(1) Small-scale drawings of all floors in the building, showing room arrangements and exits; also location on the lot.

(2) Estimate the replacement cost of the building, using the type of construction and materials of which building was constructed. Determine the costs of all replacement repairs, to which add the relative loss in value of each component part of the building because of its deterioration. The sum of these two factors will determine the percentum of deterioration.

(3) Determine its classification, as outlined in paragraph (a) and the area within which it is located (Fire or Residence Area); accordingly take the proper action.

(4) Photograph of building.

We found it advisable, following one court action, to quote all the sections relating to dilapidated, unsafe, or insanitary buildings.

(c)

(1) A building described in paragraph (a)-(1), if of a permitted construction in its location, should be ordered repaired. In this case, submit an itemized list of repairs which must be made, in default of which building is to be closed and boarded up, if structurally safe, or razed if otherwise. If a non-conforming type of construction in its area location, order the building condemned and razed.

(2) For buildings described in paragraph (a)-(2), follow the same procedure as under (c)-(1), except that if it is of a non-conforming type of construction, permit further occupancy unless insanitary, until it becomes beyond reasonable repair, at which time condemnation proceedings are to be begun; if insanitary and vacant, order it closed and boarded up until it becomes beyond reasonable repair, at which time order it razed. Repairs to such a building are optional with the owner.

(3) A building described in paragraph (a)-(3) is to be ordered vacated at once, condemned, and razed.

3. *After the determination* of the status of the building we conform to the following procedure:

(a) The order is typewritten on a proper form in accordance with our determination, allowing a reasonable time for compliance, usually twenty days.

(b) This order is then served not only on the fee owner, but also on all lien holders, mortgagees and tenants. To obtain the names of the proper persons, a search is made in the office of the register of deeds and abstract companies.

(c) A proper service of the order is very important. The statute requires that it shall be served in the manner provided for the service of a summons in the circuit court. These orders are served accordingly on each interested person, and a certification of such service is made on the office copy. (The orders were formerly served by police officers, but this proved unsatisfactory; they are now served by our own process server.) If owners or interested parties live out of the city, the orders are forwarded to the sheriff of the county within which they live; if they cannot be found, publication of the order is made in the official newspaper.

(d) If compliance is not had within the time allowed, a second and final notice is served specifying a time limit of ten days. If the order requires repairs only, then a limited time (usually ten days) is allowed in the original (first) service for the submission for approval of plans indicating all the alterations, following which the permit provides that all work is to be completed within a definite time based on the extent of the alterations.

(e) In the event of non-compliance with an order to repair a building, the Inspector of Buildings may have the building either closed or razed, depending upon the structural condition of the building. When it becomes necessary to contract for the razing of a building, the procedure is as follows: the contractors are requested to submit two bids, (1) to raze the building and remove the material, and (2) to raze the building and pile the material on the premises. The policy of the Department has been to accept the less expensive of the two bids.

(f) Continual supervision of all the work outlined herein is necessary. Every step of the procedure must be checked by a responsible party, and all conferences with owners are to be noted and memoranda of them kept. Card systems and files of all the records are kept so that in the absence of the individual in charge, the chief of the Department only has access to the records and makes decisions.

It is obvious that when enforcement of the condemnation laws is lacking, or when they are enforced with indifference, the slum and blighted areas continue to increase in size, presenting a more difficult problem from year to year thereafter. We believe that the removal of these areas under comprehensive plans of slum clearance and rebuilding is not sufficient. For more than half a century large sections within our American cities have been slowly deteriorating until now they present almost a hopeless situation.

To clean up these areas under slum clearance and rehousing programs is an expensive procedure, for they have become entirely too large to cope with. This deterioration has taken place in the past because of lack of proper restrictions of the use of property and lack of the enforcement of building code and hygienic regulations. To continue to neglect the enforcement of building, zoning, and health regulations in the newer sections of our American cities is to permit blight to set in, at first only spotting these sections, which finally will blend into larger and larger blighted areas. In order that every community may have an orderly development, building inspection departments must be free of any political influence and must be constantly on guard to protect the interests of the community as a whole.

The activities of these departments must not be hampered by lack of budget appropriations and lack of properly trained employees, for if they are so hampered and there is apathy in enforcing the regulations, we shall continue to have and to enlarge our blighted and slum areas and create new ones.

See also page 61 of this issue.

Demolition in Atlantic City

A Practical Achievement, as Humorously Told in the "Quarterly" of the National Fire Protection Association:

The Revolution in Atlantic City

THE Royal Palace has been destroyed. The Bolsheviks didn't do it. It wasn't even in Russia. Law-abiding citizens tore it down. It was in Atlantic City. It was a hotel. For several months from day to day it looked more and more like nothing at all, until now the boys are playing marbles on its site with the blue sky as the limit. Destruction usually doesn't make for repose of spirit; but this destruction did. Gentlemen whose condition in life was responsible for their sleeping in the vicinity of the Royal Palace may now awaken in the night without looking at the ceiling for the fire glare which the Royal Palace was qualified to furnish. Vacant lots do not usually start conflagrations.

Albert Bell, who has been Chairman of the Board of Directors of the N.F.P.A. for so many years that he believes firetraps will burn, had a friend in Atlantic City named Clifford Deacon. Clifford was the quiet sort of chap who would never make trouble for anybody unless he thought it was right and proper and then he would make plenty. Albert took Clifford for a walk one day and showed him about a hundred vacant and dilapidated buildings any one of which if a fire started on the right kind of night might burn the World's Greatest Playground to the ocean. He told Clifford that as he wasn't very busy just then he should go out and have these old buildings torn down.

If Mr. Deacon had been a city official he might have taken this as a criticism. Being merely a private citizen he took it as a compliment—and took it seriously. An old-time resident and business man, Curtis Eldredge, helped him make a survey. The Mayor was interested, so was James Peterson, Superintendent of Buildings, and Joseph Leeds, Fire Chief; but nobody had any legal authority to start the revolution. They combined their efforts to get it, and on March 16, 1933, Mayor Bacharach signed an ordinance to take immediate effect providing for the removal or destruction of any building, wall or structure which is or may become dangerous to life or health and which might tend to extend a conflagration, "and to assess the cost thereof as a municipal lien against the premises." This last clause was quietly persuasive. Nothing will stimulate an American like a dollar.

Thus the Atlantic City revolution came, demolishing over 85 separate buildings in one year, and not even a cop interfered with it. There was the Royal Palace with its 300 rooms, the Blackstone with 400, the Lexington with 235, the old omnibus called the Charm Club, the Reading Railroad depot, and no end of other fire-traps; and when the Federal Government came around to see what all the shooting was about, it bought Craig Hall, worse if anything than the Royal Palace itself, and began clearing the site for a new post office.

And so, with this record of unparalleled destruction resulting from their original conspiracy, Albert and Clifford sit as composedly drinking lemonade in Haddon Hall as if they had been organizing a Sunday School.

Government Urged Not to Finance Reconditioning in Slum Areas

WITH large sums now available for the reconditioning of private property, through direct loans by the Home Owners' Loan Corporation, and also through loans by local financial institutions insured in part under the provisions of the new National Housing Act, there may be danger of handicapping by such loans large-scale demolition projects in slums and blighted areas. Among the organizations that have made recommendations in this matter to the authorities in Washington is the National Fire Protection Association, which last month adopted the following resolution:

Whereas, the Home Owners' Loan Corporation has been authorized by Congress to loan money for the purpose of reconditioning properties of home owners in financial distress; and

Whereas, recent surveys of certain slum or blighted areas of several of our large cities have disclosed the large increase in both the fire losses in, and the cost of providing fire protection for, such areas as compared with the cities as a whole, as well as the considerable increase in crime, vice, delinquency, disease, and in the cost of police, welfare and other services in each such area as compared with the entire city;

Therefore, be it resolved, that the Board of Directors of the National Fire Protection Association, an organization devoted to the conservation of life and property from fire, recommends to the Home Owners' Loan Corporation the rejection of all applications for reconditioning loans applying to property situate in such areas as are classified as slum or blighted districts, destined by housing and/or city planning and zoning authorities for clearance, re-planning and/or re-zoning, excepting, however, such properties as are approved by the said authorities for modernization or replacement, and that the National Fire Protection Association offers its services to the Home Owners' Loan Corporation and local authorities in connection with the classification and rehabilitation of such areas from the viewpoint of protection of life and property from fire.

The Municipal Bond Market

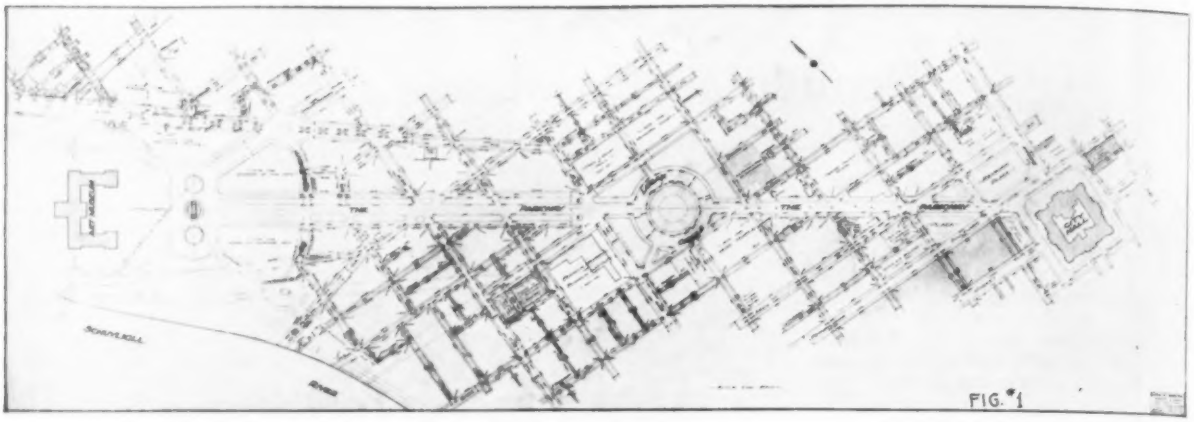
Recent sales of new issues, from the July numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$750,000	Hamilton County, Ohio, Poor Relief..	2	2.75 Avg.	1.87
220,000	Franklin County, Ohio, Poor Relief..	2.25	2.83 Avg.	2.21
293,000	Andover, Mass.. Junior High School..	2.25	9.16 Avg.	2.23
156,000	Stark County, Ohio, Poor Relief.....	2.5	2.83 Avg.	2.49
163,000	Woodbury County, Iowa, Funding...	3	5 Avg.	2.80
275,000	Quincy, Mass., Street Construction, Water, Sidewalks	2.93 Avg.	4.48 Avg.	2.85
230,000	Winona, Minn.. Sewage Disposal Plant	3.10	11.83 Avg.	3.09
290,000	Summit County, Ohio, Poor Relief...	3.25	3 Avg.	3.15
474,500	Augusta, Maine, Water Dist. Refunding	3.25	17.25 Avg.	3.24
100,000	Shippensburg, Pa., School District...	4	17.2 Avg.	3.48
166,000	East Providence, R. I., High and Elementary Schools	4	15 Avg.	3.56
58,000,000	New York City, School, Relief, Rapid Transit, Dock, Water Supply and Various Municipal Purposes	3.69 Avg.	5.94 Avg.	3.80
100,000	Port Jervis, N. Y., Relief of 1934....	3.80	7	3.80
291,000	Hempstead, N. Y., School.....	4	16 Avg.	4
2,962,000	South Carolina, State Highway Certificate of Indebtedness	4.5	13.75	4.25
414,000	Hempstead, N. Y., School District...	4.30	15.25 Avg.	4.29

TRAFFIC CONTROL AND FACILITATION

Conducted by Publications Committee, Institute of Traffic Engineers, 175 Fifth Ave., New York

Maxwell Halsey, Chairman, Harry Hemminga, Reyburn Hoffman, Benoit Laberge, Theodore T. McCroskey, Donald M. McNeil, A. J. Naquin, Hawley S. Simpson, Arthur G. Streeta, Peter J. Stupka, Lawrence S. Tuttle, John C. Wrighten



A New and Successful Development in Signal Timing

By **T. M. MATSON**
Traffic Engineer,
City of Philadelphia

A UNIQUE development in traffic signal coordination, devised by R. A. Mitchell, Designing Engineer of the Traffic Engineering Division of the city of Philadelphia, makes possible a smooth progression of traffic at moderate rates of speed on a heavily traveled artery with both *two- and three-way intersections.*

The design of a progressive signal system for a heavy traffic street with only two-way intersections does not present a serious problem. When three-way intersections enter into the design, however, it becomes exceedingly difficult to obtain good progression and satisfactory speeds. Three-way intersections are normally signalized with a three-movement timer giving a green or "go" period consecutively to each street. At least a 70-second cycle is usually necessary to provide this consecutive, orthodox movement. Such cycle lengths, however, lessen the possibilities of obtaining smooth progression at satisfactory speeds, because with ordinary block lengths short cycles are demanded to provide satisfactory progression.

Fig. 1 shows the plan and Fig. 2 a photograph of the Parkway, which is the most heavily traveled radial street in Philadelphia. It runs diagonally from City Hall Plaza, the center of the congested area, to a plaza in front of the Art Museum, a distance of 1¼ miles. The Parkway is the trunk thoroughfare for passenger vehicles from the west and northwest sections of the city. These districts are first-class residential sections largely dependent on private automobile transportation to and from the central district. Practically all this radial traffic converges on the Parkway at the Art Museum Plaza.

A recent traffic check made with CWA men shows that 27,085 cars passed a given point just west of the Crescent be-

FIG. 2

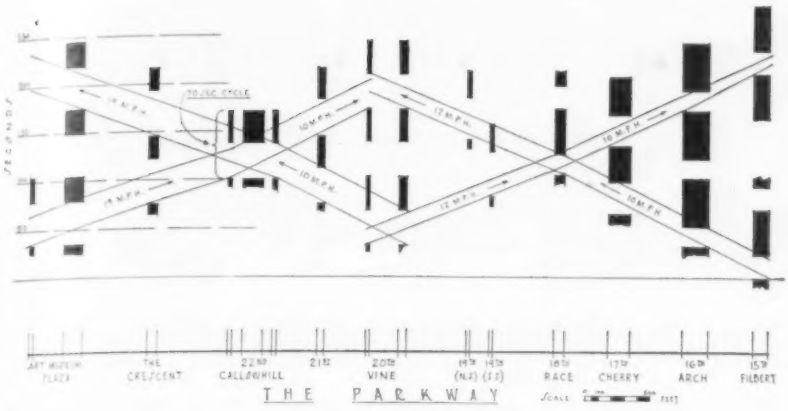


FIG. 3

tween 7:00 A. M. and 7:00 P. M. Some idea of the extreme peak loads can be obtained from the following figures:

From 8:30 to 9:00 A. M., 1,928 cars eastbound, 280 cars westbound.

From 1:00 to 1:30 P. M., 260 cars eastbound, 212 cars westbound.

From 5:00 to 5:30 P. M., 340 cars eastbound, 1,552 cars westbound.

It is significant that the Parkway serves almost entirely as a radial street and because of its relationship to the City Plan carries practically no cross traffic. Naturally, this produces relatively abnormal peaked loads.

In addition to the heavy traffic on the Parkway, the majority of the cross streets carry approximately 90 vehicles per half-hour, per lane, for the entire 12 hours. A large part of this traffic is street cars, heavy trucks and horse-drawn vehicles which, because of the intersection arrangements and the width of roadways, require in some instances over 12 seconds to cross the Parkway.

Out of the eleven intersections signalized, six required at least three-phase operation, and five could be satisfactorily handled with two-phase movements. This, of course, made the problem of progression rather difficult, not only because of the long cycle required, at the three-way intersections, but also because a large part of the time was lost in clearing traffic on the cross streets.

The recognized procedure used in designing most signal systems was followed. Field checks, volume counts, and speed runs were made in order to ascertain the correct divisions of cycle length for each intersection and obtain the speed required. All calculations pointed to the use of a 70-second cycle for both the two- and three-way intersections, which naturally gave a much larger green band to the Parkway traffic at the two-way than at the three-way intersections. (See Fig. 3.) The time space diagram was the next step, and here our first difficulty arose. Numerous attempts were made, but it was found possible only to obtain speeds varying from 10 to 18 miles per hour. This, of course, was not a satisfactory solution, since our trial speed runs showed an average of approximately 23 miles per hour. Nevertheless, this scheme was installed and, as predicted, was found to be very unsatisfactory. Some other method had to be devised and we did not want to resort to a synchronous pattern where excessive speeds are encouraged.

Realizing that good speed depended upon the frequency of recurring green intervals for the Parkway, it was decided to try a four-phase movement at the three-way intersections. This idea, if adopted, would make provision for moving the Parkway traffic twice for each movement of the other streets. In conjunction with the four-phase timers, it would be possible to use two-phase timers at the two-way intersections which would be so coordinated with the four-phase timers so as to pass through two cycles while the four-way timers pass through a single cycle. Fig. 4 shows how the two-phase and four-phase timers are coordinated by the use of 40-second and 80-second cycles respectively.

Convinced that this was the proper solution, the next step was to find timers to meet these requirements. The manufacturer who had supplied the three-phase timers that were used, was consulted and, after experiments, decided four-phase timers could be made. This additional equipment was made, and as far as can be ascertained was the first of its kind.

The system was put into operation on March 19, 1934, timed in accordance with the time space diagram, Fig. 4, and except for a little confusion, which is natural until drivers become accustomed to the timing, moves the Parkway traffic so smoothly that even during peak hours the congestion that was apparent under three-phase timers used in conjunction with two-phase timers is entirely absent.

It is felt that this development of four-phase timers in conjunction with two-phase timers is another forward step in the science of traffic regulation and control, which by the introduction of factual and scientific data, and engineering principles is day by day going forward in the reduction of accidents and the relief of congestion.

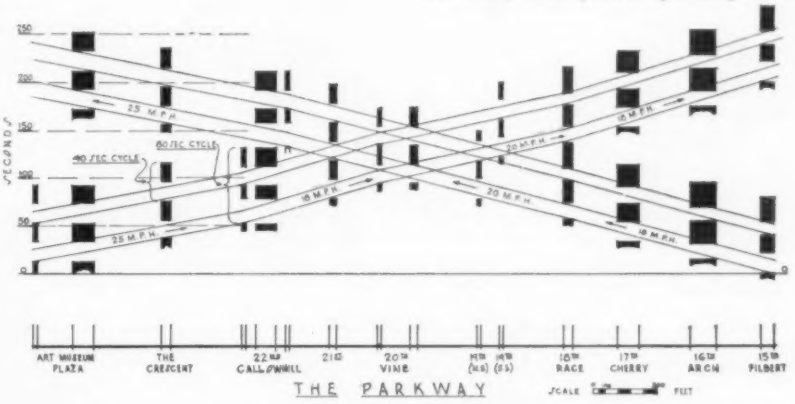


FIG. 4

Firemen and Traffic

ALL fire apparatus in New Orleans must obey the traffic lights just as does every other person operating a vehicle on the highways, Fire Chief John M. Evans has ordered. The issuance of the instructions, which were sent to all engine companies, followed a decision by the State Court of Appeals in which it was held that fire apparatus should stop at red signal lights. There had been a previous rule to obey traffic signals, but now it is being enforced.

No longer will the heavy apparatus, sirens shrieking and firemen clinging perilously to hand rails as they struggle into their rubber coats, dash through crowded streets and around dangerous corners with nothing to lessen danger except the skill and judgment of the driver and the ability of everybody else to get out of his way. The Department has suffered many casualties from accidents while responding to alarms. With the infinite multiplication of privately owned motor vehicles, no street, however wide, could open a lane through which heavy trucks could travel at a speed far above normal.

Carelessness and recklessness is not always to blame for blocking the traffic lane of the engines. In order to obey the law, a motorist may sometimes have to take a chance of violating a city ordinance and colliding with cross traffic which has the technical right-of-way. Relative values of life and property thus enter the situation, and the new ruling wisely puts human life first.

Submitted by A. J. NAQUIN.

Water Rates and Service Charges, Installation Charges, Hydrant Rentals and Sprinkler Costs—IV

Abstracts of Water Department and Company Reports

Blytheville, Ark.

Population	10,000
" served	10,000
Number of services	1,276
" " meters	1,276
" " hydrants	126 municipal 6 private
Miles of water main	18.5

The schedule of water rates applying to all meters is as follows:

First	2,500 gals. at	$1.50
Next	2,500 " "	30c per M
"	5,000 " "	20c " "
All over	10,000 " "	15c " "

The minimum bill per month for the various sizes of meters is as follows:

1" meter	$ 3.00
1¼" "	5.00
1½" "	7.50
2" "	10.00
2" " on special rate of 10c per M gals. for all water used	20.00
3" " " " " 10c " " "	30.00
4" compound water meter on a special rate of 10c per M for all water used	30.00

Rentals of $10.00 quarterly per hydrant are charged on all municipal fire hydrants and the same rates for private fire hydrants.

The sprinkler charges are $10.00 per month per installation.

H. Hardin,
Associated Utilities, Inc.

New Orleans, La.

Population	492,000
" served	487,000
Number of services	84,965
" " meters	82,665
" " hydrants	7,358
Miles of water main	754

The water rates are made up of two items: the service charge according to the size of the meters to meet the cost of maintaining the meter and service, accounting, collecting, meter reading, inspecting, etc.; and, second, the charge for water to cover the cost of pumping and purifying the water, maintenance of plant, etc.

The service charge based on the size of the meter is as follows:

⅝" meter	$ 0.75 per quarter
¾" "	0.90 " "
1" "	1.20 " "
1½" "	1.80 " "
2" "	3.00 " "
3" "	4.50 " "
4" "	6.00 " "
6" "	10.50 " "
8" "	18.00 " "
10" "	27.00 " "
12" "	36.00 " "
16" "	54.00 " "

All water consumers whose premises are connected with the sewers and who use the public water supply for flushing the water-closets, or who reside in areas where sewers are not yet available and who use the public water supply for flushing water-closets, will be allowed free for sewerage purposes one-quarter of their total consumption; provided, however, that this free allowance shall not exceed:

600 gals. per quarter for each permanent inmate	
300 " " " " "	employee on the premises, not less than 8 hours per day
200 " " " " "	pupil in schools, colleges, etc.

The free water allowed for sewerage purposes is deducted from the total consumption as shown by the meter, and the remainder is paid for at the following rates:

Up to 100,000 gals. per month	10c per 1,000 gals.
Over " " "	7c " " "

In figuring service and water charges each meter is considered separately.

Bryson Vallas,
General Superintendent, Sewerage and Water Board of New Orleans.

Ashland, Wis.

Population	10,622
" served	10,622
Number of services	2,637
" " meters	1,165
" " hydrants	269
Miles of water main	33,454

The meter rates for all types of consumption other than public fire protection are as follows:

First 12,500 cu. ft. per month at	21.5c per 100 cu. ft.
Next 37,500 " " " " "	14.5c " " " "
" 250,000 " " " " "	12.0c " " " "
For all over 300,000	@0.9c " " " "

Annual Service Charges

½" or ⅝" meter	$ 14.40
¾" "	21.60
1" "	36.00
1½" "	50.40
2" "	81.60
3" "	144.00
4" "	259.20
6" "	432.00
Each additional unit of service	3.60.

Public fire protection service, including the use of all mains and hydrants as of December 31, 1923, was billed by the Water Department to the city at $31,000 per year. For all extensions of the public fire protection service after that date, a charge of 20c per year per lineal foot of main laid plus a fixed charge of $18.00 per year for each hydrant set and added to the system is made.

All outside hydrants similar to those used for the Public Service, are charged at the same rate provided for extension and additions to the Public Service.

The metered private fire service is required for all automatic sprinkler systems or standpipes inside buildings, the cost of the meter, its installation and maintenance being paid for by the consumer. All water except that actually used in fire fighting is billed at the regular commercial metered service rate. The service charges are as follows:

2" connection per year	$ 9.60
3" " " "	12.00
4" " " "	18.00
6" " " "	24.00

The following rates are charged for unmetered private fire service to automatic sprinkler system or standpipes inside of buildings.

2" connection per year	$18.00
3" " " "	30.00
4" " " "	60.00
6" " " "	120.00

J. A. Snow,
Manager, Water Department.

Highland Park, Mich.

Population	32,000
" served	32,000
Number of services	7,850
" " meters	8,100
" " hydrants	301
Miles of water main	54.75

The meter rates for quarterly billing are as follows:

First	1,000 cu. ft.	$1.25
Up to	2,000,000 " "	65 per M
Over	2,000,000 " "	60 " "

No service charge whatsoever is made. The city does not install services, these being installed by the property owner or his agent.

There is no public or private hydrant rental charge.

Sprinkler connections are charged at the following rates:

6" service	$6.00 per quarter
8" "	9.00 " "

M. McKINNON,
Assistant Superintendent, Highland Park Water Department.

Youngstown, Ohio

Population	175,000
" served	175,000
Number of services in use	34,518
" " meters	34,518
" " hydrants	3,509
Miles of water main	376.73
Per capita consumption	52 gals.

The quarterly meter rates are uniform to all consumers. The bills are subject to a discount of 10% if paid on or before the 15th of the month in which rendered.

QUARTERLY RATES

For first	1,000 cu. ft. or any part thereof,		$3.00
" next	9,000 " "	$2.70 per	M.
" "	90,000 " "	1.50 "	"
" "	400,000 " "	1.00 "	"
" "	500,000 " "	.80 "	"

All service connections or pipes for supplying water from the city mains to property must be installed at the expense of the property owner or persons making the application, and no one except an authorized employee of the Division of Water is permitted to tap or make any such connections to the mains or distribution pipes. All service connections between the city mains and a point approximately 1 ft. inside the curb line including the curb cock and curb box are installed by employees of the Division of Water only. Charges for service connections between the city main and a point approximately 1 ft. inside the curb line are made as follows:

Size of tap 1½"	$5.00	per year
" " " 2"	6.00	" "
" " " 3"	9.00	" "
" " " 4"	12.00	" "
" " " 6"	18.00	" "
" " " 8"	30.00	" "
" " " 10"	50.00	" "

No assessment charge is made when the fire service is metered at the expense of the consumer or owner. Whenever any premises have their own water supply but have connections with city mains for use only in case of failure or insufficiency of their own supply, the following minimum quarterly payments are required for such connections. Such cross-connections must meet State Board of Health requirements.

For each ½" or ⅝" tap	$1.00
" " ¾" tap	2.00
" " 1" "	3.00
" " 2" "	6.00
" " 3" "	12.50
" " 4" "	20.00
" " 6" "	40.00

ARTHUR L. SCHMIDT,
Chief Engineer, Division of Water.

Toledo, Ohio

Population	296,000
" served	350,000
Number of services	78,000
" " meters	68,700
" " hydrants	5,652
Miles of water mains	798

The meter rates established April 26, 1920, and still in force are as follows:

First	10,000 cu. ft. per month	$1.00 per 1,000 cu. ft.
Next	150,000 " " "	.90 " " " "
"	1,000,000 " " "	.70 " " " "
Over	1,160,000 " " "	.50 " " " "

The rates are increased 10 per cent for service outside the city. The service installation charges are $1.00 per meter inside the city, and $1.50 per meter outside the city. The minimum annual charge for 8,500 cu. ft. of water is $8.50, and the minimum monthly charge is 80c.

SERVICES INSTALLATION CHARGES

Copper	Curb Cock	Corp. Cock	16 ft. "Alley"	20 ft. curb to curb	24′	28′	32′	36′	40′	Back of Lot 8′	16 ft. brick, concrete or macadam built on center line, viz.—State Highways
			Dirt	Paved	Dirt	Paved	Dirt	Paved	Dirt	Paved	Dirt	Paved	Dirt	Paved	Dirt	Paved	Dirt	Paved	Dirt	
¾"	¾	¾	$26	51	29	60	31	68	33	75	35	83	37	91	39	99	24		$42
1"	1	1	32	57	35	66	37	74	39	81	41	89	43	97	45	105	30		48
1½"	1½	1½	46	71	51	82	56	93	61	103	66	114	71	125	76	136	42		67
2"	2	2	To be estimated on application.																	

Services are maintained by Division of Water from curb box to main.

Service connections are permitted in any size from ¾" to 2" at the option of the applicant and must be paid for at the time of making the application. The cost of making the connection is computed from the center of the street no matter on which side of the street the main may be located.

The Division of Water charges $10.50 for the installation of a ⅝" meter; $5.25 to repair frozen ⅝" meters, and $5.50 to repair ⅝" meters damaged by hot water. All other maintenance costs are borne by the Division.

There is no revenue received by the Division of Water from public fire hydrants. When water for private fire protection is furnished on an assessment basis, the charge is based on the size of the service main and is payable quarterly in advance. The charge for such service is as follows:

All service connections and service pipes from the city mains to a point approximately 1 ft. back of the curb, including stop cock or valve and box for the valve, are put in only by employees of the Division of Water. Applications must be made for such service by the owner of the property or his duly authorized agent. The person making the application for service connections must pay in advance for the permit and for furnishing all material and labor for the service connection and pipe complete. For the normal pressure of the main pipe line in the street exceeding 30 pounds per square inch, no connection is allowed greater than 8" in size for a service pipe. Mains larger than 12" in size are not tapped for any service pipe. All water services must be metered at the expense of the owner or tenant. Water meters are also applied at the expense of the owner of the premises or tenant to all fire pipes from which water has been used or is being used unlawfully or contrary to the ordinances or regulations governing fire lines, or if the owner or occupant desires to have a meter applied to the fire pipe supplying such premises instead of paying the regular fire service rental.

There is no charge for fire hydrants.

Sprinkler connections are billed on an annual basis as follows:

4" connection	$ 8.00	per year
6" "	10.00	" "
8" "	15.00	" "
10" "	20.00	" "

PRATT W. EGBERT,
Commissioner, Division of Water.

Lynchburg, Va.

Population	40,600
" served	42,500
Number of services	9,771
" " meters	9,771
" " hydrants	732
Miles of water main	127

The monthly meter rates are as follows:

560 cu. ft. or less	$1.00	Excess at	$1.80	per	1,000
3,000 " "	5.40	" "	1.50	"	"
10,000 " "	15.90	" "	1.20	"	"
20,000 " "	27.90	" "	90c	"	"
40,000 " "	45.90	" "	75c	"	"
70,000 " "	68.40	" "	60c for all over		

The minimum charge monthly is based on the size of the meter and is as follows:

⅝" meter	$1.00
¾" "	1.50
1" "	2.00
1¼" "	3.00
1½" "	4.00
2" "	6.00
3" "	11.00
4" "	22.00
6" "	45.00

The public fire hydrants are billed by the Water Department to the city at $20.00 per hydrant per year.

Private fire protection charges include $12.00 per private fire hydrant per year and ¼c per sprinkler head per month for private sprinkler systems.

RICHARD F. WAGNER,
Director, Water Department.

San Diego, Calif.

Population	160,000
" served	156,000
Number of services	50,000
" " meters	40,027
" " hydrants	3,030
Miles of water main	582.78

For water furnished within the limits of the city for combined domestic and irrigation use, the rates are 8c per 100 cu. ft. The minimum monthly rate for water furnished through a meter is $1.00.

The monthly minimum rates for strictly domestic service within the corporate limits are as follows:

For ⅝" and ¾" meters	$1.00	per	month
" 1" and 1½" "	1.50	"	"
" 2" meters	2.00	"	"
" 3" "	3.00	"	"
" 4" "	4.00	"	"
" 6" " and larger	5.00	"	"

The minimum monthly rate for all

water furnished through a meter outside the corporate limits is as follows:

For ⅝" and ¾" meters		$1.50	per month
" 1" and 1½" "		2.00	" "
" 2" meters		2.50	" "
" 3" "		4.00	" "
" 4" "		5.00	" "
" 6" "	and larger	6.00	" "

The charge for fire hydrants within the corporate limits is $1.05 per month per hydrant and outside the corporate limits, $2.50 per month per hydrant. All water furnished to the various departments of the city is measured by meter, when so ordered by the City Manager, and all water so used is charged to their respective budget accounts and paid for monthly from such funds.

The monthly minimum charge for all fire services not connected or used for ordinary daily usage, is $1.00 per month within the corporate limits and $2.00 per month outside the corporate limits.

Water rates are fixed for construction work depending upon the volume or area included in the project. Rates for water furnished for any use or purpose whatever within the corporate limits where special construction rates are not provided are as follows:

For the first	500 cu. ft.	per meter per month	20c per 100 cu. ft.
" " next	4,500	" " " " " "	10c " " " "
" " "	5,000	" " " " " "	18c " " " "
" " "	10,000	" " " " " "	17c " " " "
" " "	30,000	" " " " " "	12c " " " "
" " "	50,000	" " " " " "	10c " " " "

Water furnished for any use whatsoever outside the corporate limits where rates are not provided is 25c per 100 cu. ft.

F. M. Lockwood,
City Manager.

San Antonio, Texas

Population	240,000
" served	260,000
Number of services	48,215
" " hydrants	2,771
" " water meters	45,689*
Miles of main	630

* Meters are removed from vacant property. The system is 100 per cent metered on paying accounts.

The private residence rate for water meters and the minimum charges are given in the following table:

Size	Meter Service Charge Inside	O.C.L.	Minimum Inside	O.C.L.	Total Charge Inside	O.C.L.	Water Allowance in Cu. Ft. Inside	O.C.L.
⅝"	.16	.16	.96	1.91	1.12	2.07	889	889
¾"	.28	.28	1.50	1.91	1.78	2.19	1,400	889
1"	.40	.40	2.00	2.00	2.40	2.40	1,900	889
1½"	.64	.64	4.00	4.00	4.64	4.64	3,900	2,200
2"	.88	.88	6.00	6.00	6.88	6.88	5,900	3,600
3"	3.60	3.60	12.00	12.00	15.60	15.60	11,900	7,600
4"	4.50	4.50	16.00	16.00	20.50	20.50	16,300	10,200
6"	9.00	9.00	32.00	32.00	41.00	41.00	39,400	23,100

All water in excess of the minimum inside the city is charged at 10c per 100 cu. ft. up to a consumption of 14,000 cu. ft. per month. If the consumption is over that amount, it is charged according to the commercial scale given below. All water in excess of the minimum O.C.L. (outside city limits) is charged at 15c per 100 cu. ft. up to a consumption of 13,800 cu. ft. per month, and if consumption is over that amount, it is charged according to the outside city limits commercial scale. All bills are subject to 15% cash discount if paid within the discount period shown on the bill. If service is discontinued for nonpayment, a turn-on fee of $1.00 is charged before the service is resumed. No charge is made for turning water off or on for a vacancy or in emergencies.

The meter rates and minimum charges for commercial service are as follows:

				Per 100 Cu. Ft.	Amount
First		1,500 cu. ft.		$ .25	$ 3.75
Between	1,500 and	10,000	" "	.22½	22.73
"	10,000 "	30,000	" "	.20	62.73
"	30,000 "	60,000	" "	.17	113.73
"	60,000 "	90,000	" "	.15	158.73
"	90,000 "	125,000	" "	.12	200.73
"	125,000 "	160,000	" "	.10	235.73
From	160,000 up			.09	

Size	Meter Service Charge Inside	O.C.L.	Minimum Inside	O.C.L.	Total Charge Inside	O.C.L.	Water Allowance in Cu. Ft. Inside	O.C.L.
⅝"	.16	.16	.60	1.20	.76	1.36	300	300
¾"	.28	.28	1.50	1.50	1.78	1.78	800	400
1"	.40	.40	2.00	2.00	2.40	2.40	1,300	600
1½"	.64	.64	4.00	4.00	4.64	4.64	3,100	1,700
2"	.88	.88	6.00	6.00	6.88	6.88	5,000	2,900
3"	3.60	3.60	12.00	12.00	15.60	15.60	11,400	6,800
4"	4.50	4.50	16.00	16.00	20.50	20.50	16,300	9,700
6"	9.00	9.00	32.00	32.00	41.00	41.00	39,400	23,100

	Cu. Ft.	Step Rate Inside	O.C.L.	Step Amount Inside	O.C.L.	Total Cu. Ft.	Total Amount Inside	O.C.L.
First	300	.20	.40	.60	1.20	300	.60	1.20
Next	400	.18	.27	.72	1.08	700	1.32	2.28
"	3,300	.11	.165	3.63	5.45	4,000	4.95	7.73
"	4,000	.10	.15	4.00	6.00	8,000	8.95	13.73
"	4,000	.09	.135	3.60	5.40	12,000	12.55	19.13
"	8,000	.08	.12	6.40	9.60	20,000	18.95	28.73
"	8,000	.07	.105	5.60	8.40	28,000	24.55	37.13
"	372,000	.06	.09	223.20	334.80	400,000	247.75	371.93
"	600,000	.05	.075	300.00	450.00	1,000,000	547.75	821.93
"	1,000,000	.04	.06	400.00	600.00	2,000,000	947.75	1,421.93

All over @ .03 inside .045 O.C.L.
15% cash discount if paid within discount period.

The minimum charge is 75c per month. Bills are rendered quarterly and must be paid within 15 days from date or the water service is shut off. All discounts on bills were discontinued November 29, 1927. Outside the city limits, the meter rate is 30c per 100 cu. ft. in all quantities.

There are no hydrant rentals for public fire hydrants.

Sprinkler connections are installed at cost from the city main to the property line. No charge for water supplied for sprinkler service unless diversion for purposes other than fire protection service is made, in which case a meter is installed and all water used is charged at the regular rate.

C. W. Smedberg,
Director, Public Works and Service.

If water is used in excess of minimum allowance, use second table above to determine charge for water and add thereto the meter service charge shown above. Rate shown is per 100 cu. ft.

The rates for unmetered private fire protection are as follows:

Sprinkler Service (Annual Charge)

4"—min.	$48.00	max. $48.00
6"—min.	48.00	Add 5c for each sprinkler head over 200 up to max. $66.00.
8"—min.	72.00	Add 5c for each sprinkler head over 500 up to max. $96.00

Non-Sprinkler

3"	$60.00	All are net annual
4"	80.00	charges payable in
6"	96.00	advance.
8"	150.00	
Private fire hydrants.	20.00	per year

A discount of 10 per cent is allowed if the private fire sprinkler service is full automatic with an A.D.T. alarm system in use.

W. D. Masterson,
Manager, City Water Board.

Greensboro, N. C.

Population	55,000
" served	45,000
Number of services	9,500
" " meters	9,500
" " hydrants	1,178
Miles of water main	160

The quarterly meter rates which became effective January 1, 1928, are as given at the top of the next column:

In the May, June, and July Issues

have appeared reports in this series from Dayton, Ohio; Fort Wayne, Ind.; Jefferson City, Mo.; Milwaukee, Wis.; Mount Vernon, N. Y.; Spartanburg, S. C.; Ames, Iowa; Anniston, Ala.; Burlington, N. J.; Cedar Rapids, Iowa; Columbia, S. C.; Corvallis, Ore.; Dodge City, Kans.; Jackson, Miss.; Hanover, Pa.; Indianapolis, Ind.; Jonesboro, Ark.; Manitowoc, Wis.; New Castle, Ind.; Olympia, Wash.; Rapid City, S. Dak.; Rochester, Minn.; Salt Lake City, Utah; Washington, D. C.; Wilmington, Del.; Winona, Minn.; Wausau, Wis.; Yonkers, N. Y.; Worcester, Mass.; Ogden, Utah; Kingston, N. Y.; Keene, N. H.; Newark, N. J.; Dallas, Texas; Mobile, Ala.; Ottumwa, Iowa; Pittsburgh, Pa.; Petersburg, Va.

IMPROVING MUNICIPAL ADMINISTRATION

Current Items from the Public Administration Clearing House

NRA Codes Modified for Cities

CITIES should have less difficulty in making economical purchase of municipal supplies, with their recent exemption from NRA code provisions that conflict with their contracting laws, says a communication to members of the American Municipal Association and the United States Conference of Mayors from Paul V. Betters, Executive Director.

The fire-hose manufacturer, lumber dealer or seller of paper drinking-cups who makes a bid for a municipal contract may now:

1. Quote prices and terms of sale as favorable as those made to commercial buyers for like quantities.

2. Quote definite prices or terms of sale that are not subject to a boost in cost during the life of the contract. Prices may be quoted for definite quanities and for definite periods, up to three months, or longer, if the particular code permits it. For indefinite quantities, prices may be quoted for six months or more.

3. Quote prices and terms to apply on contracts which will become effective not more than 60 days from the date of the opening of bids.

4. Quote prices F.O.B. point of origin and/or F.O.B. destination.

"Relief to cities as large consumers entitled to special consideration under the codes has come about after much trouble with collusive price-fixing on the part of bidders," says Mr. Betters. "Milwaukee has already reported relief under the new regulations.

"There is still some further need for protection of cities in their municipal purchasing under the codes, however. In many instances they have been adversely affected by the requirement on the part of industries that materials bought should be tested for quality and acceptance in the factory and not on the job or in the cities' laboratories. The only final solution for the problem of public purchasing under the codes is complete exemption."

Cities Try Municipal Gasoline Business

TO get a more moderate rate on their gasoline, several Tennessee cities have gone into the gasoline business themselves, according to the *United States Municipal News*, bulletin of the American Municipal Association and the United States Conference of Mayors.

The Mayor of Chattanooga has undertaken a study of the local gasoline situation, to determine the feasibility of the city's opening a filling station as a means of combating high prices. Gasoline was 8 cents higher a gallon in Chattanooga than in Nashville and Memphis, when the Mayor instituted the study.

Athens, Trenton, Kingston, Harriman and Cookeville are among other Tennessee cities reported as engaging in the business of selling gasoline to the general public. Trenton closed its municipal gas station when prices were reduced, and will reopen it if prices increase.

The cities indicate that they do not want to go into the commercial gasoline business in competition with the big oil companies. But they point out that when they can buy gasoline and sell it at a profit and at a much lower price than the other stations are charging, they feel they have a right to do it.

Two Arkansas cities also announce a similar plan of action if necessary, to secure a reduction in prices of gasoline.

"Those who have studied the problem know that there is no more effective weapon to bring unreasonable prices down than municipal competition," comments Paul V. Betters, Executive Director of the American Municipal Association and the United States Conference of Mayors.

"This has been the experience of numerous cities throughout the country. During the World War, when profiteers were engaged in mulcting the public through any form of business, public officials learned that a certain way to secure honest prices was for the city to engage in the business itself."

Cities and Utilities

CITIES in practically every state are working for reductions in utility rates, according to the United States Municipal News, bulletin of the American Municipal Association and the U. S. Conference of Mayors. Many of them are securing electric, gas and telephone service at lower cost to their citizens.

In several states blanket reductions have been announced by the utilities. Three hundred Indiana cities have had their electric rates reduced, by order of the State Public Service Commission. Gary, Ind., a city of 100,000, will save $23,000 on its street-lighting bill for the year. In Florida, 149 cities recently had their electric rates reduced. Fifty per cent more street-lighting current will be furnished them for the same amount of money.

Electric rate reductions averaging 25 per cent for domestic consumers went into effect in May in 31 Tennessee cities, by order of the State Railroad and Public Utilities Commission. Los Angeles householders now pay 1½ cents per kilowatt-hour instead of 2 cents, after 175 kwhrs have been used. Dallas has just gained an annual reduction of $400,550 for electricity users in the city.

North Carolina cities, acting through the League of North Carolina Municipalities, are investigating telephone rates in the state. The Michigan Public Utilities Commission has ordered a state-wide reduction in telephone rates. Eighteen up-state New York cities are working with the State Public Service Commission in an investigation of New York Telephone Company rates. The four major cities of Tennessee—Memphis, Nashville, Knoxville and Chattanooga—are demanding a 20 per cent reduction in municipal telephone rates.

Among other single cities studying rate problems and seeking reductions are Erie, Minneapolis, El Paso, Albany, Miami, San Diego, Yonkers, Fort Worth and Oklahoma City.

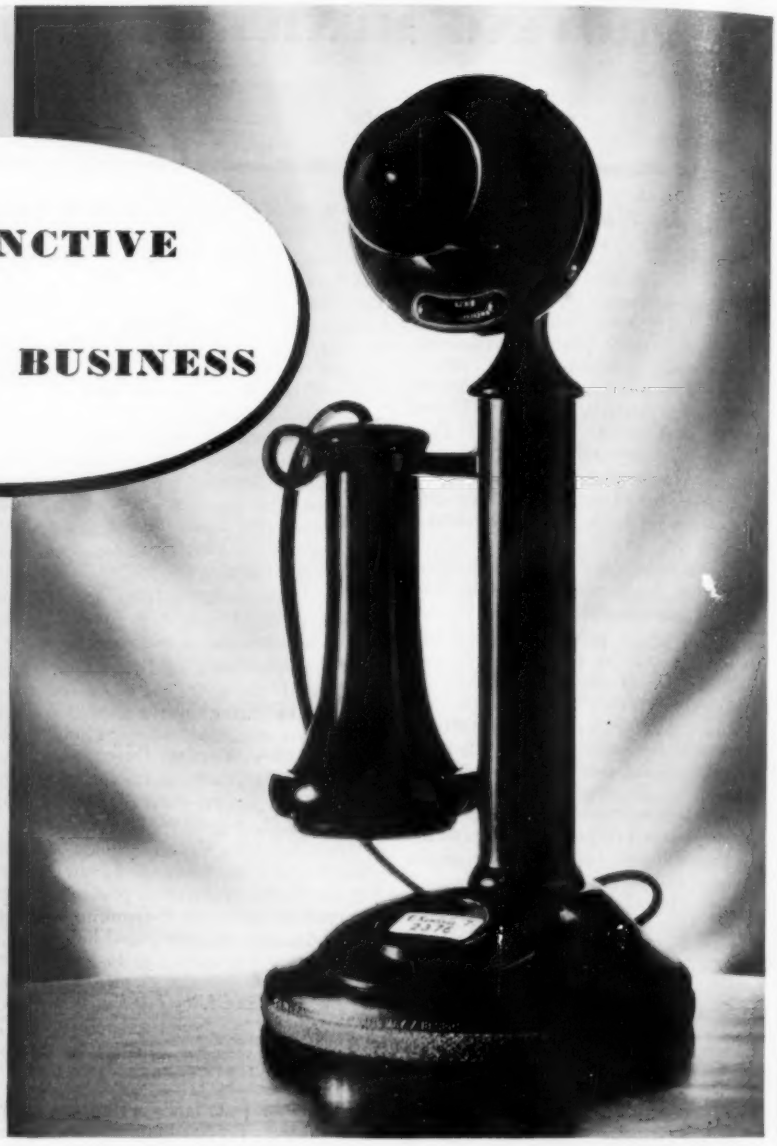
Tax-Collecting Plans for the Installment Age

COLLECTING taxes in installments—a widespread practice now both for current and delinquent taxes—is advantageous and justifiable. But cities must tie-in this installment paying so that revenue comes in at the beginning of the fiscal year and regularly throughout it, says Carl H. Chatters, Executive Director, Municipal Finance Officers' Association.

About one-half the states and many cities individually make some provision for the payment of current taxes on an installment basis. The plans include: (1) semi-annual payments; (2) quarterly payments; (3) monthly or weekly payments; (4) separate tax-collection dates for city, school and other units; (5) advance or pre-payment of the annual tax-bill; (6) arranging payment to meet individual needs. "Benefits and drawbacks to installment plans must be considered from both the city's and the taxpayer's viewpoints," Mr. Chatter says. "In so far as installment paying promotes the collection of delinquent taxes, thus turning frozen assets into cash, the city may cut down its borrowing and carry on its functions. The sale of property which would be thrown on the market may also thus be prevented."

The individual taxpayer benefits if he can pay his delinquent taxes by installments, it is pointed out, since it helps him retain his property through a time of stress. The most important result, however, is to permit the taxpayer to adjust payment of his taxes to the same period in which he pays other accounts, such as gas and electric bills. Monthly collection of taxes is expensive for the city, but with proper administration and installation of mechanical billing, it should

A DISTINCTIVE AMERICAN BUSINESS



The Bell Telephone System is operated in the interest of the public

THE Bell System is a widely owned organization operating a public service under federal and state regulation.

Its threefold purpose is to give the public the best telephone service at the lowest possible cost, give steady work at fair wages to its hundreds of thousands of employees and pay a reasonable return to the men and women who have invested in it.

The constant endeavor of the management is to deal equitably and honorably with each of these groups. There is no reason to do otherwise. There are 675,000 people who own the stock of the parent company—American Telephone and Telegraph. They are the owners of its nation-wide property. They are your neighbors. They live in every state of the Union and their average holding is twenty-seven shares. No individual or organization owns as much as one per cent of the stock.

In the truest sense, the Bell System is a business democracy—born in America, brought to its present stature by American enterprise, financed and operated by and for the people of America.

BELL TELEPHONE SYSTEM

Do you mention THE AMERICAN CITY? Please do.

be possible to collect in quarterly payments at least, without prohibitive cost.

On the other hand, remitting penalties on delinquent taxes, also a common practice now, has had disastrous results by discouraging payments, according to Mr. Chatters. "Plans to absolve taxpayers of penalty on their back taxes can be justified only as a temporary expedient," he comments. "Their final effect on the taxpaying morale of the American public is open to question. While it is true that remission of penalties may for a time cause some payment of delinquent taxes, still those who were paying promptly before will be inclined to delay in the future, either because they feel that they were being discriminated against or that further remission of penalties will be made."

Store-Building to Meet the Need

A NEW approach in the planning of neighborhood shopping centers shows that only half as many stores are needed as are usually proposed by planning engineers who go by the commonly accepted rule-of-thumb methods, according to a bulletin distributed by the National Association of Housing Officials.* The new plan of gaging store needs in a community is suggested by architect Clarence S. Stein, who described it in a recent issue of *Architectural Record*.

Speculation in "business sites" and the shooting-up of rows of "tax-payers" have blighted the orderly development of residential neighborhoods, Mr. Stein explains. To stem this, engineers and planning commissions devised formulas for figuring the proper amount of business frontage. These were usually based on counting the number of existing stores or their listings in the telephone book, even though the stores might be empty or the tradesmen going bankrupt because of over-competition.

Applying his own method to one small town, Mr. Stein finds only half as much store frontage usable as old formulas would indicate. His index for estimating the kind and number of stores needed in a community is based on answers to these queries:

1. How many dollars will the neighborhood spend at the stores?

2. How will the dollars be divided among the grocer, the butcher and fellow tradesmen?

3. What are the minimum sales volume and size for a successful store of each type?

4. How much rent can these different stores afford to pay?

Informational tools to answer these questions include the figures from the Census of Distribution made in connection with the last Federal census, showing store-coverage of every town of 10,000 and over; estimates of the purchasing power of the community, and the income and probable budgets of the residents; and data from recognized trade authorities.

* See page 81 of this issue.

Over-building has bad effects on planning for city growth and particularly planning for new communities, says the National Association of Housing Officials. For this reason it is important that business centers and stores of communities now being planned be allocated with as much dependable knowledge of local conditions as is possible.

Arlington County Pioneers Again

ARLINGTON COUNTY, VA., first in the country to put itself under the county manager form of government, has pioneered again by installing improved operating and cost accounting systems to cover all public works activities of the county. It is the first county to make such a move, according to Public Administration Service, Chicago, which installed the system.

Under the new system, County Manager Roy S. Braden will have at hand a running check on work done by all county forces and its unit cost. Day-by-day check on the amount of money spent and the work done on each street and road in the county, for example, will enable him to balance the work on one street against that on another and to decide upon best maintenance methods. He will also be able to comply with the Virginia law, which specifically states that he shall budget expenditures for each road and street.

Through the accounts set up for the county shop, complete per mile and per hour costs, including operation, maintenance and depreciation expense analyses, will be available for each piece of motor equipment operated by the county. The expense of each car privately owned by employees, serviced at county expense in return for its use on county business, will also be shown, in direct relation to the number of miles traveled for the county. Tire records will make possible comparison of mileage on different brands of tires, so that the county after a period of observation may practice economy here.

The daily and monthly reports itemizing all activities of the Public Works Department will enable the County Manager to check not only costs of supplies but also the efficiency of working methods and the ability of men on the jobs.

Re-housing the Displaced Tenant

NOW that the Government is actually acquiring land for public housing, and demolition has begun in several localities, cities must give attention to re-housing the displaced tenant, says a bulletin of the National Association of Housing Officials. Adequate funds must be provided for moving and relocating displaced families unable to bear these expenses. There must be careful preparation for re-housing them in the most satisfactory dwellings available, at rentals they have been accustomed to pay.

Recommendations made by a committee of the Association, following recent conference, includes these statements:

1. As soon as a city has selected a site for a public housing development, an official should be appointed to be responsible for moving and re-establishing families who must leave the area being rebuilt. As a part of his duty, he will interview displaced families and list available vacant housing units, analyzing these facts to determine suitable and congenial districts to which the families might move.

2. The local Emergency Relief Administration and private welfare agencies should bear the cost of moving and re-establishing the families who are on their relief rolls, and those who are not but who are unable to pay for the cost of moving. It is suggested that moving squads be made up as work relief projects.

3. From housing surveys made by the official in charge of moving families, neighborhoods should be marked out in which a large proportion of displaced families probably will re-locate. The official should assist in promoting the renovation of sound dwellings in these neighborhoods and help local groups to bring about the demolition of unsafe and insanitary buildings and the provision of more recreational spaces.

4. A careful record should be kept of the new residences of all moved families, in order that they may be informed later of the quarters which will be available in new housing developments, and so that adequate and accurate information can be secured on the effect of new housing construction on displaced families.

Practical Training for Public Service

COLLEGE students and graduates who are fitting themselves for public service are getting a chance for practical training for their jobs in bureaus of municipal research.

Four graduates of California universities who this year apprenticed themselves to the Los Angeles County Bureau of Efficiency have been offered positions with the county upon their graduation this month. The apprentice plan was tried for the first time this year and, according to H. F. Scoville, Director of the Bureau, it has been a success.

For several years the Detroit Bureau of Governmental Research has cooperated with the University of Michigan to provide opportunity for promising students of municipal management to carry on investigations which help them understand the practical problems of city government. "Graduates" of the Detroit Bureau are now heading similar bureaus in other cities.

The Rochester Bureau of Municipal Research each year takes charge of the group of students of public administration at Syracuse University.

The Cincinnati and Dayton Bureaus of Governmental Research also have developed programs of apprenticeship training in municipal government in cooperation with universities.

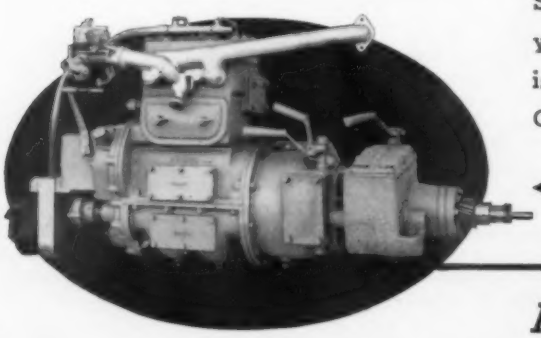
With a "Caterpillar" Diesel Fifty, the costs of dirt and rock moving on this highway job near Morrison, Colorado, were 16½ cents per yard. With other equipment, costs were 27½ cents to 61 cents per yard.

Fredrick & Watson, building 27 miles of new road through Nevada desert, find "Caterpillar" Diesel Tractors a powerful aid in cutting costs. "Caterpillar" Diesels handle the toughest jobs on low-price fuel—and less of it.

"THE 'CATERPILLAR' DIESEL IS THE GREATEST ENGINE I'VE EVER SEEN"

●● says J. H. Argerter, who operates the Moniteau County, Missouri, "Caterpillar" Diesel Tractor. He adds: "I have worked with many engines since 1920 and this Diesel tractor is beyond a doubt the best of all."

"No expense, no delay"—"Fuel costs below our expectations or even hopes"—"Not a minute's time lost"—"Lots of power, and the smoothest we've ever known"—"Simpler than a gas tractor, and better in every way." . . . Those are typical expressions from "Caterpillar" Diesel owners. Some of them bought on confidence in "Caterpillar" superiority—some on study of "Caterpillar" design and construction—now they have the proof of performance. Study the "Caterpillar" Diesel, or talk to users—either way you'll come to the conclusion that the "Caterpillar" Diesel is the surest, safest investment in power equipment. Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



Mr. R. G. Warren, Supervisor, of Hampton, N. Y., says: "The starting system can't be beat—this system (gasoline starting engine) does away with costly up-keep of batteries and is always a sure starter."

AMERICA GOES DIESEL

Planning and Housing News

National Resources Board Succeeds National Planning Board

BY executive order of President Roosevelt on July 3, there was created the National Resources Board, to study and plan for the better utilization of the land, water, and other national resources of the country.

The personnel of the Board includes the Secretary of the Interior, Chairman; the Secretary of War, the Secretary of Agriculture, the Secretary of Commerce, the Secretary of Labor, the Federal Emergency Relief Administrator, Frederic A. Delano, Charles E. Merriam, and Wesley C. Mitchell. The last three named also constitute an Advisory Committee, of which Mr. Delano is Chairman. The order at the same time abolished the National Planning Board, transferring its personnel, duties and records to the new organization. The relationships with state planning agencies heretofore established by the National Planning Board will be continued and developed by the new National Resources Board. The order provided for a Technical Committee as well, with no fixed personnel or tenure.

According to a statement issued by H. H. McIntyre, Assistant Secretary to the President:

"The Board will prepare a program and plan of procedure to be submitted to the President dealing with all aspects of the problem of development and use of land, water and other national resources, in their physical, social, governmental and economic aspects.

"A report on land and water use is called for in the order, to be submitted before December 1, 1934. The program and plan will include coordination of projects of Federal, state and local governments, defining the division of responsibility and costs among the various governmental authorities.

"The new Board, which will coordinate the diverse efforts of several government agencies in attacking the problems, supersedes the Committee on National Land Problems, which is abolished by today's order.

"As an example of the major problems facing the new Board, there is the imperative need of saving those lands of the country now being rapidly turned into virtual deserts through wind and water erosion, and the relocation of those who are trying to wrest a living from this rapidly deteriorating land. Such lands include the first prairie lands of the West where drought and wind combine to carry away the remaining fertile top-soil, and hill land where, after land has been cleared, rain has washed the formerly fertile hillsides clean of productive soil, with consequent gullying and virtual ruin of the land for productive purposes. Such lands can be saved by returning them to forest, or utilizing them for grazing rather than attempting to raise clean-tilled crops, which induce rapid erosion.

"Coupled with this problem, of course, is that of relocating those farmers and their families on better land, where their efforts will bring them a better living and more certain economic security.

"The program will be prepared with more in mind than better land utilization. It will give consideration to the better balancing of agricultural production and the solution of human problems in land use. It will aim to point the way to correction of the mis-use of land and water resources, thereby improving the standards of living of millions of impoverished families."

Many agencies of the Federal Government will cooperate in this broad program, including the following:

Interior Department: National Park Service, Office of Indian Affairs, the General Land Office, the Bureau of Reclamation, the Geological Survey, the Subsistence Homesteads Division, and the Soil Erosion Service.

Department of Agriculture: Bureau of Agricultural Economics, the Forest Service, the Agricultural Adjustment Administration, the Farm Credit Administration, the Bureau of Chemistry and Soils, the Biological Survey, the Bureau of Agricultural Engineering, and the Extension Service.

Relief: The Federal Emergency Relief Administration and the Federal Surplus Relief Corporation.

In matters affecting navigable waters, the War Department will cooperate with the National Resources Board. Likewise, the Bureau of Fisheries of the Department of Commerce will cooperate in matters affecting that national resource.

An allotment of $100,000 to the recently established National Resources Board to carry out its functions was recently announced by the Public Works Administration.

PWA Housing Division Distinct from Federal Housing Administration

TO clear up apparent confusion regarding the functions of the Housing Division of the Public Works Administration and the work of the newly established Federal Housing Administration the PWA issued on July 10 the following statement:

"The PWA Housing Division is concerned solely with projects involving clearance of slums and the construction of low-cost, multiple, group dwellings. Such projects are being carried forward either by a small number of limited dividend corporations under the supervision of the Division or by the Division itself working in cooperation with local housing authorities or commissions. This work is under the direction of Col. Horatio B. Hackett, Director of Housing.

"The Public Works Administration Housing Division has no connection with the Federal Housing Administration created under the National Housing Act passed June 18 by Congress, and of which James A. Moffett is Administrator. The Federal Housing Administration is concerned with the repair of existing houses and construction of new homes. It is also empowered to insure mortgages on low-cost housing and slum clearance, but all of its activities will be conducted independently of the PWA Housing Division."

Appointment of Dwight L. Hoopingarner and F. J. C. Dresser as Associate Directors to advise with Colonel Hacket was subsequently announced.

To aid Mr. Moffett, Albert L. Deane has been appointed Deputy Housing Administrator of FHA.

Coleman Woodbury Becomes Executive Director of NAHO

COLEMAN WOODBURY has been elected Executive Director of the National Association of Housing Officials, according to announcement by Ernest J. Bohn, President of the Association, at its headquarters, 850 East 58th Street, Chicago.

Mr. Woodbury is Secretary of the Illinois State Board of Housing, and Consultant to the Housing Division of PWA; he was Secretary of the Illinois Housing Commission, and directed the studies leading to the enactment of the Illinois housing laws. Long a student of urban land problems, he was for some years on the staff of the Institute of Land Economics at Northwestern University.

Mr. Woodbury succeeds Charles S. Ascher, who has been Executive Director of NAHO since it was organized last November. Mr. Ascher returns to his duties as Secretary of the Public Administration Clearing House, Chicago.

In its first seven months, NAHO has made a place for itself as the chief agency concerned primarily with the administrative problems of public low-cost housing—problems of legislation, organization and procedure. Its field consultants have advised official and semi-official groups in twenty-five cities from coast to coast; its staff has aided in drafting enabling legislation in seven states; and its headquarters has served as a clearing house for information for officials in the field, furnishing them with bulletins and answers to inquiries, interpreting current developments. It has worked closely with the various Federal housing agencies.

Pan-American Housing Conference Being Planned

IN accordance with a resolution adopted at the recent Pan-American Conference, there is to be held in Buenos Aires a Pan-American Housing Conference, to study the housing problem in its hygienic, economic and social aspects.

The steps taken up to last month, as stated in a letter to THE AMERICAN CITY from L. S. Rowe, Director General of the Pan American Union at Washington, are:

1. The Pan American Union has prepared a preliminary draft of the program, which has been sent to the Argentine Government. The Argentine Government will formulate the final program.

2. The Argentine Government has appointed an Organizing Committee, composed of Senors Dr. Carlos M. Coll, Dr. Juan Ochon and Dr. Benjamin Nazar Anchorena.

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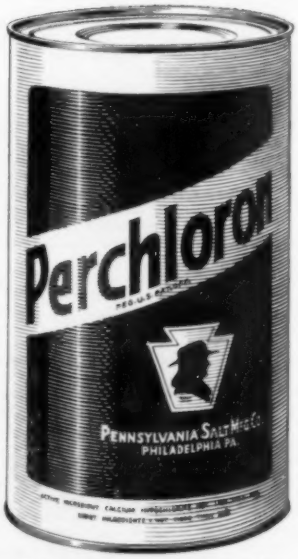

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To Stimulate Legislation and Action in Public Housing

AT a meeting of representatives of twenty-five national organizations held in New York on June 28, plans were made by the National Public Housing Conference for nation-wide activities during the coming fall and winter.

The definite objectives include: (1) state enabling legislation for public housing; (2) the creation of municipal housing authorities; and (3) inducing the President and Congress to provide adequate funds for a vigorous and continuing federal-local slum clearance and rehousing program.

In addition to its second national conference to be held in Washington in January, the National Public Housing Conference is making preparations to hold a series of regional conferences on public housing in the autumn.

As shown on page 83, September and October meetings are scheduled for Brookline, Memphis and St. Louis. Full information may be had from the headquarters of the National Public Housing Conference, 112 East 19th Street, New York.

Colonel Waite Leaves PWA for Cincinnati's Department of Economic Security

THE resignation of Colonel Henry M. Waite as Deputy Administrator of the Public Works Administration, effective September 1, has been announced with regret, and with high praise for his work, by Administrator Ickes.

Colonel Waite is leaving PWA to return to Cincinnati, where he will take charge of the Department of Economic Security, an organization designed to cope with unemployment and rehabilitation problems, sponsored by the city of Cincinnati, Hamilton County, Ohio, and the Spelman Foundation.

After announcement of his resignation, Colonel Waite said: "After having spent more than a year as Deputy Administrator in this organization it is perfectly clear to my mind that for some years to come a public works program will be absolutely essential to care for the unemployment situation. This fact is well recognized by the Administration in the setting-up of a board to think in terms of future planning for the United States. . . .

Commenting on his new work, Colonel Waite continued:

"For some years there has been intelligent interest throughout the country in the necessity of a careful analysis and planning of our present unemployment situation. Partial experiments have been carried on in two or three cities, with the result and determination now to set up a complete analysis and plan.

"For these purposes, Cincinnati and Hamilton County, Ohio, have been selected as the ideal spot to make such a study. It will cover not only unemployment by rehabilitation and the cooperation of industry in Cincinnati to determine through analysis the best plan to follow in solving this most important question before the United States today."

Foreign Villages Draw Crowds at Century of Progress

THAT the American people will flock to interesting and instructive exhibits of community life is being demonstrated this summer at Chicago's Century of Progress Exposition. Last year the Belgian Village proved so popular that there have been added twelve new foreign villages in the World's Fair of 1934. Among the most characteristic of these are the Swiss Village, Italian Village, Black Forest Village, Irish Village, English Village and Dutch Village. The American Colonial Village is also being visited by interested throngs.

Origin of State "Improvement Authority" Idea

To the Editor of THE AMERICAN CITY:

In the discussion in your July issue (page 52) of the state "improvement authority" plan too much credit was given to the undersigned, and too little to John Ickes, Engineer of the Chicago Board of Local Improvements. This possible method of facilitating the flow of Federal funds for public works was suggested by Mr. Ickes in January, 1932. The same idea has meanwhile arisen at several points, but Mr. Ickes should be given credit for the first statement.

JACOB L. CRANE, JR.

Economizing on Municipal Insurance

MUNICIPALITIES may well review with an eye to economy the insurance carried on various municipal properties and covering certain kinds of liabilities, says the *Municipal Finance News Letter,* bulletin of the Municipal Finance Officers' Association.

Dallas, Texas, which two years ago hired an independent insurance auditor for $300 to check rates, risk and coverage on municipal property, within 90 days recovered $800 in cash refunds. Policies and risks were again checked this year, the Director of Finance reports.

Although no definite policy on insurance can be laid down for cities of various sizes, students of the problem have pointed out that very large cities, with widely scattered buildings, many of which are fireproof, probably waste money when they buy fire insurance protection.

Many cities have not carried fire insurance on public property for years. Others have built up reserves, through self-insurance, sufficient to take care of all emergencies.

Municipal insurance plans must be well managed to be economical and successful, it is pointed out. When every opportunity for economy of risk and coverage is taken, the cost of protection can be reduced appreciably in many cases.

In Kansas City, Mo., the Civic Research Institute has recommended to the Board of Education that it take out one general policy to cover fire losses in excess of $50,000 and that the Board assume its own losses up to this amount. This kind of policy, relatively inexpensive, involves the same principle as the limited liability collision insurance offered by automobile insurance companies.

American Bar Association to Discuss Municipal Law

AT the annual meeting of the American Bar Association, in Milwaukee, a round table discussion will be held on the afternoon of August 27 on subjects selected by the Association's new Committee on the Law of Municipal Corporations, of which Prof. C. W. Tooke of the School of Law of New York University is Chairman.

On "Legal Problems Affecting the Non-Federal Phases of the Public Works Program" there will be a paper by Frederick Wiener of the Federal Emergency Administration; the discussion leader being Benjamin F. Langworthy of Chicago. Henry Epstein, Solicitor General, State of New York, will discuss Mr. Wiener's paper. "State Receiverships of Municipal Corporations" will be presented by Henry F. Long, State Commissioner of Corporations and Taxation of Massachusetts, and the discussion led by David M. Wood of New York City. There will also be a paper by Dr. Edwin M. Borchard, Yale University, on "Immunity of Municipal Corporations from Tort Liability," with Ambrose Fuller of Minneapolis as discussion leader. Dr. Borchard's paper will be discussed by Dr. Leon T. David, of the University of Southern California.

Professor Tooke's associates on the Committee on the Law of Municipal Corporations are Henry P. Chandler, Chicago, Ill.; Harvey H. Bundy, Boston, Mass.; L. Arnold Frye, New York City, and Walter Chandler, Memphis, Tenn.

Recent City Manager Appointments

WILLIAM A. MILLER was appointed as the first City Manager of Clifton, N. J., July 3. He had been City Clerk of Clifton for the past fifteen years, and will continue to serve the city in that capacity as well as that of Manager.

Burton A. Garlinghouse, former Mayor, succeeded O. S. Roen as City Manager of South Pasadena, Calif., on July 5. Mr. Roen was recently advanced to Alhambra.

J. C. Ruff received a permanent appointment as City Manager of Staunton, Va., July 1. He was Acting Manager for two months and was formerly Street Superintendent under W. F. Day, now County Manager of Henrico Co., Virginia, whom he succeeds.

C. Sophus Johnson, former Manager of Grand Rapids, Mich., from August, 1932, to May, 1933, has been reappointed City Manager of that city to serve until May, 1935.

CLARENCE E. RIDLEY,
Executive Director, The International City Managers' Association.

GOOD NEWS FOR CITY BUDGETS

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NOW you can get V-8 performance with PROVED four-cylinder economy at the *lowest truck price in America.* The price reduction recently announced on the New Ford V-8 Trucks and Commercial Cars is a GENUINE price reduction. Ford did NOT raise prices last spring and then lower them again to the old level. In fact, Ford truck prices were reduced last December as well as on June 15th. Go see this New Ford V-8 Truck. Ask your Ford dealer to arrange an "On-the-Job" test for you, with your own loads, over your own routes, with your own driver at the wheel. You'll be convinced!

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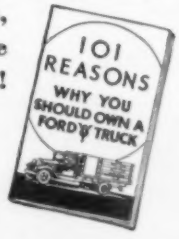

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Load carried on reinforced axle housing. Axle shafts have nothing to do but turn the wheels—can be removed without jacking up the truck.

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After thousands of miles of economical service, you can replace your original engine with a block-tested, factory-reconditioned engine for less than an engine overhaul and without tying up your truck.

80-HORSEPOWER V-8 TRUCK ENGINE

Uses no more fuel than a "four." Dual carburetor. Copper-lead connecting-rod bearings of heavy-duty type for heavy-duty service. Full-length water-jackets.

FULL TORQUE-TUBE DRIVE

Torque tube and radius-rods take all driving and braking stresses. Springs are free to perform their intended function of cushioning the load against road shocks.

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Nuisance

CALIFORNIA.—*Biber v. O'Brien*, 32 Pac. 2d. 425 (District Court of Appeal, April 27, 1934).—Plaintiffs are the owners of a lot on which stands a five-story apartment building. Defendant has erected on his neighboring lot a building known as the Mayflower Hotel. Plaintiffs claim that it is an illegal building because it is an apartment house. It is semi-fireproof, seven stories in height, although the State Housing Law prohibits such construction of more than six stories; it also covers more of the lot than is allowed an apartment; nor does it have the required setback in front. Plaintiffs claim they are injured by reason of exposure to fire risks, and depreciation of value of their building.

The Court holds that the plaintiffs have not suffered the special damage necessary to the recovery of damages. Violation of a penal statute does not in itself create a "private nuisance," nor does the failure to obtain a license or permit required by law. Where a structure is not in itself a nuisance, it cannot (in California) be complained of because erected or maintained to annoy plaintiffs, since intent is immaterial.

A "mezzanine floor" of full ceiling height is held in this case to be a story.

Neither depreciation in value solely on account of proximity to an unlawful structure, nor increase in fire hazard, on account of unlawful height, is such exceptional damage to justify this action.

Setback

ILLINOIS.—*Welton v.* 40 *East Oak Street Building Corporation*, 70 Fed. 2d. 377 (Circuit Court of Appeals, April 9, 1934).—The owners of property separated by a 16-foot alley from a 20-story building erected without the setback required by the zoning ordinance sustain special damages entitling them to maintain an injunction proceeding to require the building to conform to law, irrespective of whether they sustained substantial financial loss.

Undertaking Establishment

MASSACHUSETTS.—*Phillips v. Board of Appeals of Building Department of Springfield*, 190 N. E. 601 (Supreme Court, May 28, 1934).—Evidence that the owners were unable to rent or sell a large dwelling house in a residential district for residence is insufficient to sustain the decision of a board of appeals varying a zoning ordinance to allow the use of the house for an undertaking establishment, which is "business" or a "commercial enterprise."

The chief purpose of a zoning statute relates to public welfare, and the owner's financial situation or pecuniary hardship is not alone sufficient to justify a variation of a zoning ordinance. The power to vary zoning ordinances should be sparingly exercised.

Oil Wells

OKLAHOMA.—*Morgan Petroleum Co. v. Oklahoma City*, 31 Pac. 2d, 594; *Courter Oil Co. v. same*, 31 Pac. 2d, 596 (both in Supreme Court, April 3, 1934).—In view of the peculiar dangers incident to the drilling and operation of an oil and gas well within the limits of a city and of the large interest involved if the well is successful, a municipal ordinance providing that no such well shall be drilled within certain defined limits within the city until there has been filed with the city a bond for $200,000 covering each well for the payment of damages on account of injury to property, public or private, or bodily injury or death resulting from its drilling operation or maintenance, is not so arbitrary or unreasonable as to constitute a denial of due process of law under Section 1 of the Fourteenth Amendment of the Constitution of the United States, or of Section 7 of Article 2 of the Oklahoma state constitution.

An otherwise valid statute or ordinance conferring a privilege is not rendered invalid because it chances that particular persons find it hard or even impossible to comply with precedent conditions upon which enjoyment of the privilege is made to depend.

EDITOR'S NOTE.—Similar is the Oklahoma case of *Gant v. Oklahoma City* in our February, 1933 issue.

Discretionary Powers

TEXAS.—*City of San Antonio v. Zogheib*, 70 S. W. 2d, 333 (Court of Civil Appeals, March 2 and April 6, 1934).—Zogheib, the owner of a vacant lot in San Antonio, made application to the City Commissioners for a permit to erect on it a filling station. A city ordinance provides that the City Commissioners may in their discretion approve the location of such a station if "the safety, the health, the comfort, the convenience, the order or the good government of the city will be adversely affected by the granting of said permit."

The Court holds that this ordinance is unconstitutional because it grants the Commissioners a discretionary power to grant or withhold such permits without laying down a sufficiently clear and definite rule to guide them in the exercise of this power. This gives the Commissioners arbitrary power. As stated in Corpus Juris, "ordinances or regulations requiring permits from designated officials or boards in order to be valid must contain the conditions under which applicant is entitled to his permit; otherwise such ordinances or regulations may amount to an unwarranted delegation of municipal powers." The Commissioners are administrative officials, and the ordinance attempts to impose upon them legislative and judicial powers contrary to our constitutions, which keep the functions of the executive, the legislative, and the judicial departments apart.

A New Name for City Planning

To the Editor of THE AMERICAN CITY:

To a degree greater than at any time in their history, the American people are viewing the problem of "adjusting the masses to space," in a realistic and factual way, and gradually are accepting the principle that the full social and economic potentialities of the nation can be realized and made permanent only by a comprehensive program of planned land use.

A state here, a county there, a community or interrelated group of communities somewhere else, quietly are initiating the factual determinations, systematic analyses and specific courses of action whereby their "divisions" can be brought into accord with the character, condition, and available or prospective resources basic to their economic and social existence or progress, and the principle of *nationally planned land use* now finds wide acceptance.

Having noticed in the April and May issues of your magazine suggestions by you and some of your correspondents of a new name for city planning that might be more comprehensive under the present-day conditions, I would like to express my views on the subject.

As the constructive and farsighted student today recognizes the importance of public improvement or betterment planning in terms of *utility* rather than beauty, and seeks to *weigh and measure economic factors* which have been inadequately considered in the past, it would seem to me that the word "economic" would be very appropriate in re-creating a name for the service, and I would suggest "economic land planning," or "land utility planning."

Looking back many years to my Boston Latin School days, I recall that the word "economic" was derived from the Latin, "oeconomicus," translated "orderly, methodical"; which is construed nowadays with a broader scientific and analytical meaning.

EDMUND CHASE EASTMAN,
Analyst and Planner for Economic Land Utilization.
Los Angeles, Calif.

"ROADS of the WORLD"

. . . with TARVIA representing a Modern Highway

Photo: Hedrich-Blessing Studio

"Roads of the World," a feature of Ford Exposition at the Chicago Fair. Visitors are given complimentary courtesy rides in Ford V-8's on a Tarvia road that encircles replicas of historic highways. *Contractor:* Rock-Road Construction Company, Chicago, Ill.

VISITORS at the magnificent Ford Exhibit at "A Century of Progress" in Chicago may see not only the development of the Ford automobile and how it is made . . .

They may see also the development of that other essential of every good automobile ride—the ***highway***. Reproductions of twenty-one different types of roads—from prehistoric desert trails to modern highways—have been built as part of Ford Exposition. And THE road built for visitors to ride on while they view the "Roads of the World" is a Tarvia road.

Tarvia is—and always has been—the road for the sensible citizen in the sensible community. It is smooth, easy-riding, trouble-free, lasts a long, long time—and costs little to construct or maintain.

Tarvia is truly a "Road of the World." There may be communities here and there able to justify and pay for "show roads," but the road most of the world can appreciate from all angles—especially that of cost—is a Tarvia road.

Photo: Kaufmann-Fabry

Air view of Ford Exposition showing "Roads of the World" in the foreground. The main exhibit building is roofed with another famous product of The Barrett Company, Barrett Roofing.

Tarvia
GOOD ROADS at LOW COST

THE BARRETT COMPANY New York · Chicago · Philadelphia Cleveland · Boston · St. Louis · Minneapolis · Lebanon · Toledo Birmingham · Detroit · Baltimore · Columbus · Youngstown Milwaukee · Buffalo · Providence · Syracuse · Hartford · Cincinnati Bethlehem · Rochester · Portland, Me. · · THE BARRETT COMPANY, LTD., Montreal · Toronto · Winnipeg · Vancouver

THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, Attorney at Law

Accidents

County held liable for fall of truck through opening in bridge (Georgia Court of Appeals: *Warren County v. Battle*, 172 S. E. 673).

City held liable for injury to woman whose shoe heel caught in slot in bridge sidewalk (Michigan Supreme Court: *Hanshaw v. City of Port Huron*, 251 N. W. 330).

Evidence held sufficient to warrant finding that city was liable for neglect to repair hole or depression in street, resulting in injury to pedestrian (Tennessee Court of Appeals, Middle Section: *Jackson v. City of Nashville*, 68 S. W. 2nd, 137).

Statutory liability of city for motor-vehicle accidents held not to extend to fire and police vehicles (California District Court of Appeal: *Armas v. City of Oakland*, 27 Pac. 2d, 666).

Municipal auditorium janitor held entitled to recover for injury due to falling ice-box lid (Texas Court of Civil Appeals: *City of Wichita Falls v. Lewis*, 68 S. W. 2d, 388).

City held not liable for injury to automobile caused by police employee while exercising governmental function (Arizona Supreme Court: *City of Phoenix v. Greer*, 29 Pac. 2d, 1062).

Advertising Distribution

Jersey City ordinance forbidding distribution of unsolicited advertising matter to householders upheld (New Jersey Supreme Court: *Allen v. McGovern*, 169 Atl. 345).

Annexations

City held not shown to have acted unreasonably in annexing territory (St. Louis, Mo., Court of Appeals: *Bingle v. City of Richmond Heights*, 68 S. W. 2d, 866).

County board order authorizing annexation to Stockton upheld (California District Court of Appeal: *Shepherd v. Board of Supervisors of San Joaquin County*, 30 Pac. 2d, 578).

Bonds

Proposed sewer bond issue held not to create "debt" requiring tax levy provision, but invalid as incumbering income of water plant without referendum (Texas Commission of Appeals: *City of Dayton v. Allred*, 68 S. W. 2d, 172).

Interest accruing on diverted bond fund held applicable to payment of bonds (United States District Court, District of Montana: *Carnegie National Bank v. City of Wolf Point*, 4 Fed. Supp. 385).

Town held not generally liable on bonds reciting issuance in lieu of special assessment certificates (South Dakota Supreme Court: *Suttor v. Town of Wetonka*, 253 N. W. 64).

Business Regulations

Ordinance forbidding slaughter of poultry in city held void as being unreasonable (Ohio Court of Appeals, Cuyahoga County: *Simon v. City of Cleveland Heights*, 188 N. E. 308).

Civil Service

Detective held legally fined and demoted by director of public safety without hearing by civil service commission, for conduct unbecoming officer (Pennsylvania Superior Court: *Osterheldt v. City of Philadelphia*, 171 Atl. 100).

Use of profanity and giving press interview concerning request for resignation held not to warrant dismissal of superintendent of police (Michigan Supreme Court: *Carroll v. City Commission of Grand Rapids*, 251 N. W. 381).

Borough held not authorized to take lease on premises in which the Mayor had a personal interest (New Jersey Supreme Court: *Cordingley v. Borough of Mendham*, 171 Atl. 158).

Contract for improvement of athletic field held invalid for lack of competitive bidding (New Jersey Supreme Court: *Donovan v. City of Bayonne*, 171 Atl. 136).

Contractor complying with contract specifications held entitled to compensation and pay for replacing material found to be improperly used (New York Court of Appeals: *Rinehart & Dennis Co. v. City of New York*, 188 N. E. 275).

Garbage Disposal

Garbage disposal contract held invalid because not approved by Council (Indiana Appellate Court: *Mazac v. City of Michigan City*, 189 N. E. 400).

Licenses

Employee connecting hot water heater with oil burner held not a "plumber," within licensing ordinance (New York Supreme Court, Nassau County Court: *People v. Osborne*, 269 N. Y. Supp. 409).

Ordinance requiring license to conduct automobile wrecking business held inapplicable to business previously established (New York, City Court of Tonawanda: *People v. Cherulnik*, 268 N. Y. Supp. 336).

Municipal Expenditures

Home-rule city held authorized to levy tax to advertise city (Texas Supreme Court: *Davis v. City of Taylor*, 67 S. W. 2d, 1033). But another home-rule city's charter held not to sanction such expenditure (Texas Supreme Court: *Anderson v. City of San Antonio*, 67 S. W. 2d, 1036).

Municipal Utilities

Electoral vote authorizing light and power plant to be paid for out of earnings held to authorize pledge of plant and earnings for payment of price (Iowa Supreme Court: *Greaves v. City of Villisca*, 251 N. W. 766).

Bonds for new water plant held not authorized by statute authorizing bonds for improvements, extensions, etc. (New Mexico Supreme Court: *Gordon v. Hammel*, 28 Pac. 2d, 522).

Police Bonds

Statutory bond held to cover unlawful use of pistol, although bond was not so conditioned specially (West Virginia Supreme Court of Appeals: *Town of Mabscott v. Saunders*, 171 S. E. 410).

Special Assessments

To justify notice of special assessment by publication on theory that owner cannot be found, held that actual and good faith attempt to find him must be made (Ohio Court of Appeals: *City of Cincinnati v. Shaffer*, 187 N. E. 747).

Street Improvements

Elimination of street grade crossing held to exempt railroad company from assessment of its right-of-way for improvement of the street (Ohio Supreme Court: *City of Bucyrus v. Pennsylvania Railroad Co.*, 188 N. E. 355).

In a suit to foreclose paving assessment liens on front-foot plan, railway company's answer held to state a defense (Florida Supreme Court: *Atlantic Coast Line Railroad Co. v. City of Winter Haven*, 151 So. 321).

Power to sell land held not to authorize signature of petition for street improvement; contract vendee held not empowered to sign; signature of one joint owner not sufficient; public property held properly considered in determining frontage subject to assessment (Michigan Supreme Court: *Long v. City of Monroe*, 251 N. W. 582).

New charter act for city held not to repeal concurrently enacted provision for street improvements. Property owners held estopped by delay in attacking regularity of paving proceedings (Florida Supreme Court: *City of New Smyrna v. Mathewson*, 152 So. 706).

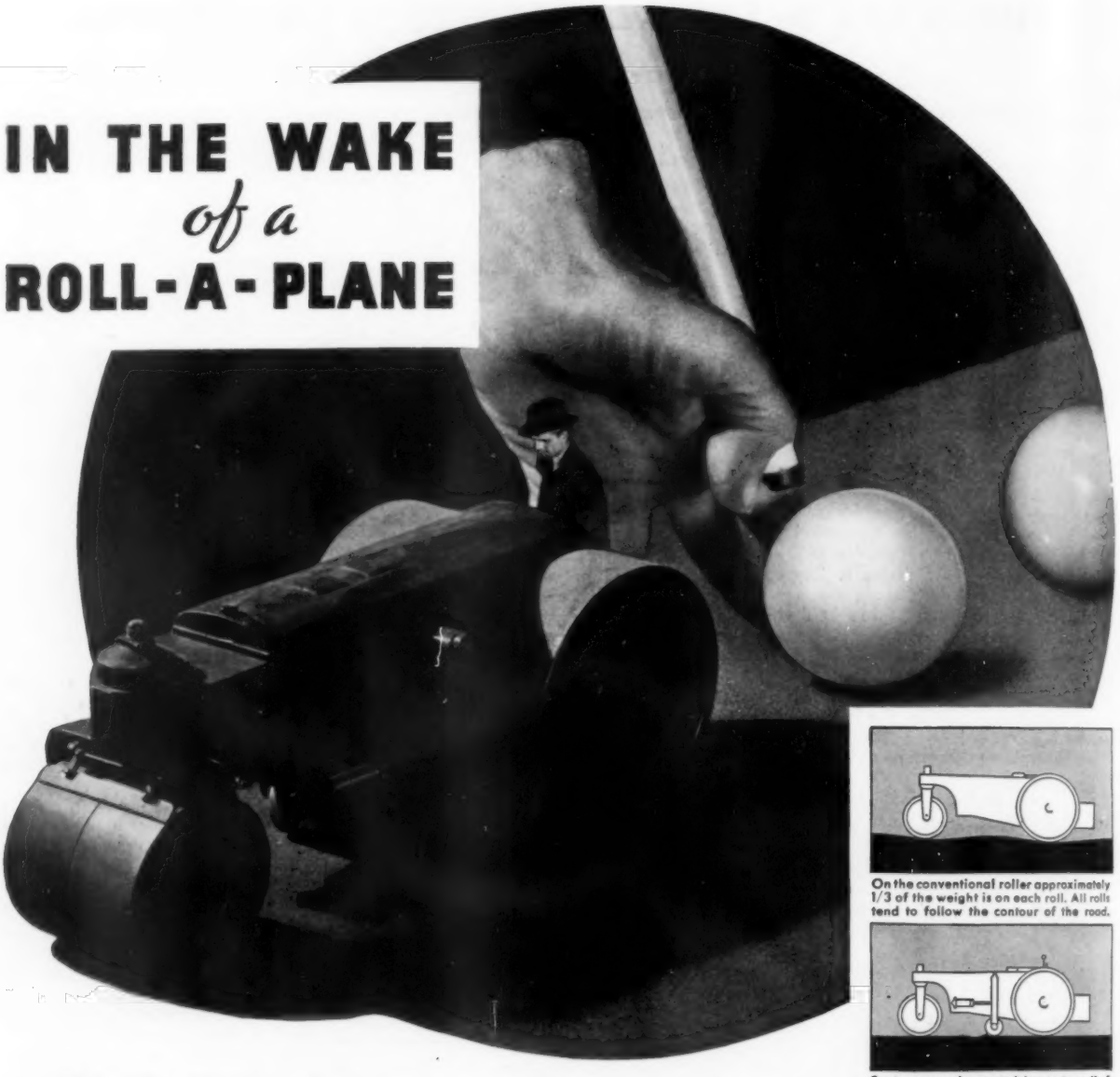
Streets

Property held not assessable for street opening because not benefited (New Jersey Circuit Court, Essex County: *In re Opening of Raymond Plaza West*, 171 Atl. 538).

Person held not entitled to enjoin laying of gas mains in street without proving special injury to him (Nebraska Supreme Court: *Chizek v. City of Omaha*, 253 N. W. 441).

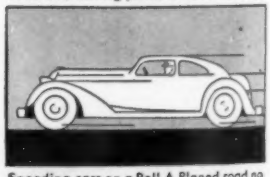
Abutter's right of reasonable ingress and egress includes right to connect with water pipes laid in street (Kentucky Court of Appeals: *Goodloe v. City of Richmond*, 63 S. W. 2d, 785).

IN THE WAKE *of a* ROLL-A-PLANE



On the conventional roller approximately 1/3 of the weight is on each roll. All rolls tend to follow the contour of the road.

Spot-pressure is exerted by center roll of a 10-ton Roll-A-Plane up to 20,375 lbs., as high spot is met. A constant plane is maintained true to the bottom surfaces of all rolls. The rolling plane LEVELS the road.



Speeding cars on a Roll-A-Planed road no longer leap from the crests of high spots, digging low spots, with constantly more rapid destruction of the surface. A smooth ride on a permanently level—and low cost!—road.

● Roads that are merely "smooth" break down, slowly but surely, under the impacts of speedy vehicles. Scientifically *level* roads, now rolled out under the moving plane of the Austin Roll-A-Plane, open up a tremendous advance in practical road building. The intermediate "spot-pressure" roller of the Roll-A-Plane compacts the humps and high spots which the familiar two-wheel roller only reduces. When you grasp the new principle it is easy to see the great development that will follow in rolled roads of all kinds. They will give long service with moderate upkeep and save a large outlay for more expensive materials. Send the coupon for the booklet which explains the Roll-A-Plane's spot-pressure principle.

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Please send me complete engineering details on the Austin Roll-A-Plane.
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MUNICIPAL AND CIVIC PUBLICATIONS

Prices quoted do not include postage, unless so stated

Municipal Administration

Municipal Administration.—By William Bennett Munro, Professor of History and Government at the California Institute of Technology. The Macmillan Company, New York. 1934. *VIII* + 699 *pp.* $3.75 *from* THE AMERICAN CITY.

This valuable book can be read with joy for its human quality, its keen comment, its assumption of the outside point of view; it will also be recognized as authoritative, complete, up-to-date, and readably analytical. It is full of neat characterizations; for example, this sentence regarding municipal reports: "Instead of encouraging the citizen to take an interest in his government, some of these reports provide him with a powerful temptation not to do so." In discussing fire prevention, the fact of our being "to an amazing degree undaunted by the prevalence of waste in all its forms" is commented on. The framework of municipal administration is clearly built up in the sections, Administrative Organization and Personnel, The Staff Departments and Their Work, and Municipal Finance; and the sections on Public Safety, Public Welfare and Public Utilities enlarge and clarify the reader's conception of the city's care for lives and living conditions. The swift advance of municipal development and responsibility is given recognition in the grouping, under the section head of "City Planning and Public Improvements," of chapters on principles of city growth, city planning, zoning, land takings and excess condemnation, streets, pavements and sidewalks, waste disposal, and sewerage; and in the separate chapters on housing, municipal airports, the regulation of traffic, and others. School administration is specifically dealt with. In evaluating the experimental research work of sanitary scientists and health experts, Professor Munro says: "Perhaps those who like to scoff at higher education, science, and research can tell us how they would set about prolonging the days of a man's years."

Municipal Finance

The significance of the new Federal Municipal Debt Adjustment Act for the officials and creditors of municipalities which are in financial difficulties is explained in a 12-page pamphlet, "The Federal Municipal Debt Adjustment Act: A Guide to Municipalities," by Carl H. Chatters and John B. Rae. It was prepared for the American Municipal Association, the Municipal Finance Officers' Association, and the United States Conference of Mayors, and has been issued as No. 41 of the Public Administration Service series. The authors present briefly the elements of a debt adjustment scheme and the factors which must be considered in determining the municipality's ability to pay. The pamphlet contains a digest of the new Act as well as the text of it in full. 25c. See also page 5 in this issue. (Apply to the Public Administration Service, 850 E. 58th St., Chicago.)

From the June, 1934, issue of the *National Municipal Review* has been reprinted "The Bonded Debt of 254 Cities as at January 1, 1934," by C. E. Rightor, Director, Atlantic City Survey Commission, formerly with the Detroit Bureau of Governmental Research. 99 pp. of tables, with 4 pp. of explanatory comment. It is stated that the primary object of the tabulation is to make available in concise form a current and complete statement of the total amount of debt outstanding in the name of each city, and also the total and per capita amount of that debt which must be retired through future tax levies upon the taxable property of each city. (Apply to the *National Municipal Review*, 309 E. 34th St., New York.)

The Investment Bankers Association of America has published (July 12, 1934) two memoranda on recently enacted amendments to the Federal Bankruptcy Act: one explanatory of the municipal debt readjustment amendment; the other relating to corporate reorganization. Both memoranda are by Paul V. Keyser, Committee Counsel for the Association. The pamphlet (16 pp.) also includes the complete text of the municipal debt adjustment amendment (Sumners-Wilcox Bill) (Apply to the Assn., 33 S. Clark St., Chicago.)

Diesel Engines

Diesel Hand Book.—By Julius Rosbloom, Diesel Engineering Institute, Jersey City, N. J. 1934. 353 *pp.* $5.00 *from* THE AMERICAN CITY.

This practical hand book, profusely illustrated, is divided into two parts, the first devoted to heat, gases, liquids and their characteristics, oil in service requirements, oil storage and piping systems, valves, pumps for diesel service, electrical subjects, and simplified methods in practical calculation. The second portion is devoted to details of diesel engines, covering types and designs, engine operation, auxiliaries, marine practice, fuel and lubricating oils, accessories, electrical transmission, operating troubles and their causes, formulae and tables, indicator practice, diesel trucks and automobiles, and a concluding chapter of pointed paragraphs which enable a diesel engine operator to check on his knowledge of diesel operation.

Civics

Community Civics.—By Samuel P. Abelow, M.A., Julia Richman High School, New York, and Brooklyn Evening High School, Brooklyn, N. Y. Globe Book Co., New York. 1934. *XXXIII* + 225 *pp.* 67c.

A textbook for junior and senior high schools, with a definitely stated purpose in the development of each chapter. The relation of the Federal and New York State governments and administrations to the well-being of New York City is brought out in each division, with detailed study of the city organization and activities. "True-False" questions and "Problems and Projects" follow each chapter, and sample examination questions complete the volume. The teaching is designed to give to the individual pupil a knowledge of his privileges and duties which will tend to make him an intelligent voter and a responsible citizen.

Pavements

The cover of The Asphalt Institute's bulletin No. 2, Research Series, of June 15, 1934, says: "High type asphalt pavements can be built practically skidproof is one of the conclusions reached by Prof. R. A. Moyer of Iowa State College in his report on 'Skidding Characteristics of Road Surfaces,' before the thirteenth annual meeting of the Highway Research Board at Washington, D. C., December 7, 1933." This is a 20-page pamphlet. The Institute comments: "Professor Moyer's experiments have demonstrated that a 'sandpaper' surface which takes the wear of traffic directly on the mineral aggregate is the desirable surface to construct. The significant fact that has been developed is that the anti-skid character of a pavement is not necessarily dependent upon the presence of coarse separated fragments in the surface." (Apply to The Asphalt Institute, 801 Second Ave., New York City.)

Salaries

The May 14, 1934, issue of *The City*, published by the San Francisco Bureau of Governmental Research (68 Post St., San Francisco, Calif.) is devoted to a study of municipal salaries in that city. The report shows: that the emergency condition of 1933 still exists and should be declared by the Supervisors; and that from the standpoint of equity the present rates of pay in the San Francisco municipal service (after the deduction, averaging 11 per cent) are comparatively high, and should not be increased under present business conditions, with a corresponding increase of about 36c per $100 in the tax rate." Comparative rates are listed for 120 classifications. 36 pp. (Apply to the Bureau at the address above.)

Planning

"Store Buildings and Neighborhood Shopping Centers," by Clarence S. Stein and Catherine Bauer, has been reprinted from *The Architectural Record*, February, 1934 (with addenda). 18 photo offset pp. Illustrated. (Apply to The Architectural Record, 119 W. 40th St., New York.)

Municipal Government

City Government in the United States.—By Charles M. Kneier, Associate Professor of Political Science, University of Illinois. First edition. Harper & Brothers, New York. 1934. *VII* + 482 *pp.* $3.00 *from* THE AMERICAN CITY.

The increase in city population, its causes, features, and resulting problems—and what the Federal Government, the states and municipalities have done about meeting the governmental necessities involved—are discussed in thorough detail in this book. The material is carefully arranged and treated for use in college courses in municipal government. Separate chapters on Municipal Powers, Municipal Liability, The Municipal Electorate, Registration of Voters, Nomination of Candidates for Municipal Office, Conduct of Elections, Political Parties and Party Organization in Cities, The Invisible Government in Cities, Initiative, Referendum and Recall, Public Opinion, Mayor and Council Government, Commission Government, The Council-Manager Plan, Administrative Organization and Operation in Cities, Judicial Organization and Administration in Cities, and The Integration of Local Governments, deal with governmental functions in cities, and furnish much illustrative material from actual conditions and practice.

Housing

The Metropolitan Housing Council, of Chicago, Ill., in its Staff News Letter of June 7, 1934, reports that the demolition project, for five months the principal subject of the Council's efforts, is now on a payroll basis. Some very stirring information is given in these 8 photo offset pages of text and illustrations, covering housing conditions which are being attacked, and the problems of rehousing; also plans for permanent procedure in these vital matters, and many details that emphasize the importance of vigorous, continued action. (Apply to the Metropolitan Housing Council, 520 N. Michigan Ave., Chicago, Ill.)

In the July issue of *City Planning*, quarterly official organ of the American City Planning Institute and the National Conference on City Planning, there is a 14-page illustrated article, "Planning a Housing Project," by Walter H. Blucher, City Planner and Secretary, Detroit City Plan Commission. It deals with the comprehensive housing plan developed in Detroit, Mich., and illustrates the importance of considering not merely the provision of employment through slum clearance projects, but also the need of the community for new housing, and the question of whether the contemplated site is the proper place for new housing. Certain studies that the Detroit City Plan started two years ago resulted in a detailed and careful survey of the city's large blighted areas, concentrated on the East Side Blighted Area, the poorest section from the economic standpoint. Special studies helped to fill in accurately the picture of what was wrong, and it was finally discovered that the best use of property in this area in its relation to the entire city, was for two-story group housing. (Apply to City Planning Publishing Co., 12 Prescott St., Cambridge, Mass.)

Sewerage

Hanover Borough, York County, Pa., has a sewerage system the history and operation of which are presented in a 12-page quarto illustrated pamphlet, in an article entitled "Hanover Sewer System and Sewage Treatment Plant," by C. A. Eckbert, Borough Manager. An enclosed sheet contains another article by Mr. Eckbert on "The Operation of the Hanover Sewage Treatment Plant and Its Sewage Ejector Stations." A secondary or oxidation treatment plant is to be added to the present treatment plant. (Apply to the Borough Manager.)

Markets

The Borough Manager of Hanover, Pa., gives a "Description of the Hanover Market House," with exterior and interior views, in a 4-page quarto leaflet. (Apply to C. A. Eckbert, Borough Manager, Hanover, Pa.)

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CHEVROLET Chevrolet trucks have *earned* their popularity—their unchallenged leadership as America's *fastest selling trucks*. Truck owners who keep cost records say that Chevrolet six-cylinder valve-in-head trucks are the most economical trucks you can buy—costing less for gas, for oil and for upkeep. Most owners who have tried different makes of trucks standardize on Chevrolets—convinced that Chevrolets stand up better and last longer. Many Chevrolet trucks have never lost a day in 100,000 to 200,000 miles of hauling. The 1934 line of Chevrolet trucks is bigger and huskier—all truck throughout. Load capacity in some units has been increased 20 to 30 per cent. The six-cylinder valve-in-head Chevrolet engine is more economical than ever. As always, you can haul more and save more with Chevrolets—the *lowest-priced* six-cylinder trucks.

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160,468 Miles . . . 1½-ton Chevrolet truck, in service eight years, hauling loads of paper averaging 2½ tons. Averaged 20 miles per gallon of gasoline on trips to Philadelphia under same load. One valve grind, new distributor points, new spark plugs only mechanical expense in 160,468 miles.

Joshua Rollman, Lititz, Penn.

115,000 Miles . . . Owner so pleased with 1932 Chevrolet truck that he bought a 1934 Chevrolet truck. The 1932 truck covered 115,000 miles in wholesale grocery hauling—average load 6 tons over mountain and desert country. Total operating cost, including depreciation, only 4.3 cents per mile. Gasoline mileage averaged 12 miles—no oil needed between changes at 1800-mile intervals.

C. B. Griffith, Ontario, Calif.

125,000 Miles . . . 1932 Chevrolet truck. Two valve grinds and one brake relining only repair expense in 125,000 miles. Averages 10 miles per gallon of gas, covering 8,000 miles per month with semi-trailer.

William Emmons, Los Angeles, Calif.

200,000 Miles . . . 144,218 Miles . . . 1931 Chevrolet 157-inch truck with dual wheels has covered 200,000 miles—still in first-class condition. Another Chevrolet 131-inch stake truck, purchased in 1930, has been driven 144,218 miles—operating costs about 50 per cent less than other makes of trucks in the same class and in the same service. These trucks will be replaced with 1934 Chevrolet trucks. Owner is standardizing on Chevrolets—plans to add two more to fleet soon.

Highway Express, Perry, N. Y.

CONVENTIONS—WHEN AND WHERE

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

AUGUST 6, WEEK OF.—CHICAGO, ILL.
National Institute for Commercial and Trade Organization Executives. Annual session. Secretary, John N. Van der Vries, 607 First National Bank Building, Chicago, Ill.

AUGUST, SECOND WEEK OF.—RICHFIELD, UTAH. (300)
Utah State Municipal League. Annual convention. Secretary-Treasurer, P. K. Nielson, Price, Utah.

AUGUST 16-17.—HARRISBURG, PA. (250)
League of Cities of the Third Class in Pennsylvania. Annual convention. Secretary, Herman A. Early, City Hall, Harrisburg, Pa.

AUGUST 20-24.—NEW YORK.
National Association of Public School Business Officials. Annual meeting. (Hotel Astor.) Secretary, John S. Mount, State Department of Public Instruction, Trenton, N. J.

AUGUST 21-24.—MILWAUKEE, WIS.
International Association of Fire Chiefs. Annual convention. Secretary, James J. Mulcahey, Yonkers, N. Y.

AUGUST 21-23.—WATERLOO, IOWA. (400)
League of Iowa Municipalities. Annual meeting. Secretary-Treasurer, Frank G. Pierce, Marshalltown, Iowa.

AUGUST 21-23.—WINDSOR, N. S. (250)
Union of Nova Scotia Municipalities. Annual convention. Secretary, Hon. Arthur Roberts, Bridgewater, N. S.

AUGUST 22-24.—WHEELING, W. VA.
American Water Works Association—Central States Section. Annual convention. Secretary, H. L. Nelson, 2435 Koppers Building, Pittsburgh, Pa.

AUGUST 23-29.—GASPE, QUE.
Union of the Municipalities of the Province of Quebec. Annual convention. Secretary-Treasurer, T. D. Bouchard, 132 St. James Street, Montreal, Que.

AUGUST 25-27.—WILLIAMSPORT, PA. (300)
Pennsylvania Chiefs of Police Association. Annual convention. Secretary, F. B. Titus, Lansdowne, Pa.

AUGUST 27-29.—KALAMAZOO, MICH.
Michigan Association of Chiefs of Police. Annual convention. Secretary-Treasurer, Donald S. Leonard, State Fair Grounds, Detroit, Mich.

AUGUST 27-29.—WHITE PLAINS, N. Y. (100)
[illegible] Association. Annual convention. Secretary-Treasurer, E. W. Livingston, Jamesville, N. Y.

AUGUST 27-29.—BINGHAMTON, N. Y. (200)
New York State Association of Chiefs of Police. Annual convention. Secretary-Treasurer, James L. Hyatt, 503 Western Avenue, Albany, N. Y.

AUGUST 28-30.—TORONTO, ONT. (200)
Ontario Municipal Association. Annual meeting. Secretary-Treasurer, H. L. Brittain, 137 Wellington Street W., Toronto, Ont.

AUGUST 28-30.—POTTSVILLE, PA. (400)
Pennsylvania State Association of County Commissioners. Annual convention. Secretary, J. C. Dougherty, Harrisburg, Pa.

AUGUST 29—SEPTEMBER 1.—WASHINGTON, D. C.
International Association of Municipal Electricians. Annual convention. Secretary, W. H. Harth, Columbia, S. C.

AUGUST 30-31.—PITTSBURGH, PA. (200)
National Shade Tree Conference. Annual convention. Secretary-Treasurer, Dr. R. P. White, New Jersey Agricultural Experiment Station, New Brunswick, N. J.

SEPTEMBER 3-7.—SALT LAKE CITY, UTAH.
American Institute of Electrical Engineers, Pacific Coast Convention. Direct inquiries to General Convention Committee, 1016 Continental Bank Building, Salt Lake City, Utah.

SEPTEMBER 3-6.—PASADENA, CALIF.
American Public Health Association. Annual meeting. Acting Executive Secretary, Dr. Kendall Emerson, 450 Seventh Avenue, New York.

SEPTEMBER 3-8.—MUNICH, GERMANY. (700)
Permanent International Association of Road Congresses. Seventh Internatianal Congress. Secretary-General of the American Organizing Committee, Thomas H. MacDonald, 1723 N Street N. W., Washington, D. C.

SEPTEMBER 5-6.—PASADENA, CALIF. (150)
California Sewage Works Association. Annual convention. Secretary, Prof. E. Reinke, University of California, Berkeley, Calif.

SEPTEMBER 11-13.—MURRAY BAY, QUE.
Canadian Goods Roads Association. Annual convention. Secretary-Treasurer, George A. McNamee, New Birks Buildings, Montreal, Que.

SEPTEMBER 11-13.—AKRON, OHIO. (200)
Ohio State Police Chiefs Incorporated. Annual convention. Secretary, E. G. Krause, 1020 Guardian Building, Cleveland, Ohio.

SEPTEMBER 12-14.—FORT WAYNE, IND. (500)
Municipal League of Indiana. Annual convention. Executive Secretary, S. E. Spurgeon, Kokomo, Ind.

SEPTEMBER 16-21.—LOUISVILLE, KY. (300)
American Institute of Park Executives and the American Park Society. Annual convention. Executive Secretary, William H. Walker, 2234 Inglewood Place, South Bend, Ind.

SEPTEMBER 17-21.—HOUSTON, TEXAS. (350)
American Prison Association. Annual congress. General Secretary, E. R. Cass, 135 East 15th Street, New York.

SEPTEMBER 17-19.—SANTE FE, N. MEX.
American Water Works Association—Rocky Mountain Section. Annual meeting. Secretary-Treasurer, B. V. Howe, 437 State Office Building, Denver, Colo.

SEPTEMBER 17-19.—PHILADELPHIA, PA.
Municipal Finance Officers' Association of the United States and Canada. Annual convention. Executive Director, Carl H. Chatters, 850 East 58th Street, Chicago, Ill.

SEPTEMBER 18-19.—HERINGTON, KANS.
Kansas Association of Municipal Utilities. Annual convention. Secretary-Treasurer, L. C. Angevine, Superintendent, Water and Electric Department, McPherson, Kans.

SEPTEMBER 18-21.—BOSTON, MASS.
New England Water Works Association. Annual convention. (Hotel Statler.) Secretary, Frank J. Gifford, 715 Tremont Temple, Boston, Mass.

SEPTEMBER 19-20.—STAUNTON, VA. (250)
League of Virginia Municipalities. Annual convention. Executive Secretary, Morton L. Wallerstein, 408 Travelers Building, Richmond, Va.

SEPTEMBER 21-22.—HAGERSTOWN, MD. (200)
Eastern Association of Fire Chiefs. Annual convention. Secretary, F. E. Soule, Coatesville, Pa.

SEPTEMBER 24-27.—ROCHESTER, N. Y.
American Society of Municipal Engineers. Annual convention. Secretary, C. W. S. Sammelman, 4359 Lindell Boulevard, St. Louis, Mo.

SEPTEMBER 24-28.—CLEVELAND, OHIO.
American Transit Association. Annual convention. General Secretary, Guy C. Hecker, 292 Madison Avenue, New York.

SEPTEMBER 24-27.—LOUISVILLE, KY. (400)
Association of American Cemetery Superintendents. Annual convention. Secretary, William B. Jones, Highwood Cemetery, Pittsburgh, Pa.

SEPTEMBER 24-27.—PASADENA, CALIF. (2,000)
League of California Municipalities. Annual convention. Executive Secretary, J. W. Charleville, 681 Market Street, San Francisco, Calif.

SEPTEMBER 24-27.—WASHINGTON, D. C.
International Association of Chiefs of Police. Annual convention. Secretary, George Black, Wilmington, Del.

SEPTEMBER 26-28.—ROCHESTER, N. Y.
International Association of Public Works Officials. Annual convention. (Seneca Hotel.) Secretary, A. M. Anderson, 100 North LaSalle Street, Chicago, Ill.

SEPTEMBER 29-30.—MEMPHIS, TENN.
National Public Housing Conference. Southern Regional Conference. Secretary, Miss Helen Alfred, 112 East 19th Street, New York.

OCTOBER.—ST. LOUIS, MO.
National Conference on City Planning. Annual meeting. Secretary, Flavel Shurtleff, 130 East 22d Street, New York.

OCTOBER, FIRST WEEK OF.—CHICAGO, ILL.
American Association of Engineers. Annual convention. Secretary, M. E. McIver, 8 South Michigan Avenue, Chicago, Ill.

OCTOBER 1-4.—BALTIMORE, MD. (450)
Illuminating Engineering Society. Annual convention. General Secretary, D. W. Atwater, 29 West 39th Street, New York.

OCTOBER 1-5.—WASHINGTON, D. C. (600)
National Recreation Association. Annual congress. Administrative Secretary, Thomas E. Rivers, 315 Fourth Avenue, New York.

OCTOBER 1-5.—CLEVELAND, OHIO.
National Safety Council. Annual congress. Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago, Ill.

OCTOBER 1-5.—BOSTON, MASS. (400)
National Tax Association. Annual conference. Secretary, W. G. Query, South Carolina Tax Commission, Columbia, S. C.

OCTOBER 2-3.—CLEVELAND, OHIO. (150)
Institute of Traffic Engineers. Annual meeting. (Cleveland Hotel.) Secretary-Treasurer, Hawley S. Simpson, 175 Fifth Avenue, New York.

OCTOBER 3-5.—ST. JOSEPH, MICH. (325)
Michigan Municipal League. Annual meeting. Director, Harold D. Smith, University of Michigan, Ann Arbor, Mich.

OCTOBER 4-5.—SWAMPSCOTT, MASS.
Massachusetts Police Association. Annual convention. Secretary, James F. Rogers, 338 Malden Street, Medford, Mass.

OCTOBER 4-5.—COLUMBUS, OHIO. (200)
Ohio Conference on Sewage Treatment. Annual convention. Secretary-Treasurer, J. R. Collier, Elyria Sewage Plant, Elyria, Ohio.

OCTOBER 5-6.—BROOKLINE, MASS.
National Public Housing Conference. New England Regional Conference. (Hotel Beaconsfield.) Secretary, Miss Helen Alfred, 112 East 19th Street, New York.

OCTOBER 5-6.—ONEONTA, N. Y.
New York State Sewage Works Association. Fall meeting. Secretary-Treasurer, A. S. Bedell, State Department of Health, Albany, N. Y.

OCTOBER 10-11.—WISCONSIN RAPIDS, WIS. (200)
Wisconsin Chiefs of Police Association. Annual meeting. Secretary, R. H. McCarty, Kaukauna, Wis.

OCTOBER 15-17.—ST. LOUIS, MO. (300)
International City Managers' Association. Annual convention. Executive Director, Clarence E. Ridley, 850 East 58th Street, Chicago, Ill.

OCTOBER 15.—PROVIDENCE, R. I.
New England Sewage Works Association. Annual meeting. Secretary, F. W. Gilcreas, State Department of Health, Albany, N. Y.

OCTOBER 15-18.—WACO, TEXAS. (350)
Southwest Water Works Association. Annual convention. Secretary-Treasurer, Lewis A. Quigley, Forth Worth, Texas.

OCTOBER 16-17.—ST. LOUIS, MO.
National Public Housing Conference. Central Regional Conference. Secretary, Miss Helen Alfred, 112 East 19th Street, New York.

OCTOBER 18-20.—KNOXVILLE, TENN. (200)
American Forestry Association. Annual meeting. Executive Secretary, Ovid Butler, 1727 K Street, N. W., Washington, D. C.

OCTOBER 21-24.—CINCINNATI, OHIO. (300)
National Association of Commercial Organization Secretaries. Annual convention. (Netherland-Plaza Hotel.) Secretary-Treasurer, Glen B. Eastburn, Chamber of Commerce, Omaha, Nebr.

OCTOBER 29-31.—ATLANTIC CITY, N. J.
Pennsylvania Water Works Association. Annual meeting. Secretary, F. Herbert Snow, 327 Telegraph Building, Harrisburg, Pa.

NOVEMBER 8-10.—OMAHA, NEBR.
American Water Works Association—Missouri Valley Section. Annual meeting. Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

NOVEMBER 8-10.—CORAL GABLES, FLA.
Florida League of Municipalities. Annual convention. Secretary, E. P. Owen, Jr., 1709 Barnett National Bank Building, Jacksonville, Fla.

NOVEMBER 12-15.—SANTA FE, N. MEX. (350)
American Association of State Highway Officials. Annual convention. Executive Secretary, W. C. Markham, 1222 National Press Building, Washington, D. C.

NOVEMBER 16-19.—WASHINGTON, D. C.
American Country Life Association. Executive Secretary, Benson Y. Landis, 105 East 22d Street, New York.

JANUARY 16-18.—NEW YORK.
American Society of Civil Engineers. Annual meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

212 years old *and still in service*

Photograph furnished by courtesy of Deutscher Gussrohr-Verband G. m. b. H. (German Cast Iron Pipe Syndicate), Cologne.

THE cast iron water main shown in the lower right corner of this photograph was recently uncovered, inspected and found in good condition after more than two centuries of service. A letter from the Municipal Gas, Electricity and Water Works of Bruhl, Germany states: "Since the year 1722 there exists for the supply of the pond in the park of the Bruhl Castle a pipe line of about 2 kilometers' length and 175 m/m internal diameter. This line has been in service up to this day and need not yet be replaced."

Cast iron mains still in use after serving 100 to 200 years, and longer, have been recently uncovered and inspected in England, France, Germany and the United States. Taxpayers have saved and are saving enormous sums in taxes or rates by reason of the long life and low maintenance cost of cast iron underground mains.

The reason for the long life of cast iron pipe is its effective resistance to rust. Cast iron is the one ferrous metal for water and gas mains, and for sewer construction, that will not disintegrate from rust. This characteristic makes cast iron pipe the most practicable for underground mains since rust will not destroy it.

For further information, address The Cast Iron Pipe Research Association, Thomas F. Wolfe, Research Engineer, 309 Peoples Gas Building, Chicago, Illinois.

Methods of evaluating bids now in use by engineers rate the life of cast iron pipe at 100 years minimum

CAST IRON PIPE

Look for this TRADEMARK REG. *trade-mark*

Why not remember to mention THE AMERICAN CITY?

NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

THE MARMON-HERRINGTON MODEL A10-4 WITH GARBAGE-GETTER BODY RECENTLY PUT IN SERVICE IN INDIANAPOLIS

A New Type of Garbage Collection Vehicle

One of the newest types of garbage collection vehicles has been added to the equipment of the Sanitary District of Indianapolis and has already been placed in service. This unit is the product of the Marmon-Herrington Co., Indianapolis, Ind. It embodies many unusual features that not only give considerably better truck performance but also remove many of the objections heretofore associated with the collection of garbage.

The truck is a special Marmon-Herrington Model A10-4, driving through all four wheels. It has a rated capacity of 1½ to 2 tons and is equipped with both standard and auxiliary transmissions with a total of eight speeds forward and two reverse. Mounted on the chassis is one of the most advanced types of garbage collection bodies, operated hydraulically by the engine of the truck. On the rear is a loading bucket with a capacity of three-quarters of a cubic yard. When this bucket is filled, it is automatically raised to the top of the body and the contents deposited in the main compartment of the body, which has a capacity of 6 cubic yards of garbage. The entire body is watertight and airtight. When closed, there is no odor whatever and the collection of garbage is made sanitary and efficient. For purposes of emptying the main compartment, the entire body may be raised by a slant-type hydraulic hoist. The body unit is known as the Garbage-Getter and is manufactured by The Elgin Corporation, of New York City, and Chicago, Ill.

A New Effective Hypo-Chlorinator for Water Works

A new unit known as the Chlor-O-Feeder has recently been brought out by Proportioneers, Inc., 9 Codding Street, Providence, R. I. This unit has been designed to meet the demand for an effective, inexpensive hypo-chlorinator for water works and for independent plants requiring their own water-sterilization apparatus. The plant insures complete safety to the operator in that the hypochloride solution is a liquid, and not a gas. The Chlor-O-Feeder is controlled by any flow-responsive device, such as standard water meter, flow-responsive rotor, venturi meter, orifice plates and constant-speed fly-power motor, and it can be installed on either new or existing meters. It can operate at any point where the water line can be cut for installation and can be operated entirely by water pressure, and therefore does not demand the expense of electric current or wiring or other special operating condition for installation.

The unit is simple in operation, easy to test and universally applicable to all sizes of water line, fits any condition of flow rate, line pressure, dosage, space available, location and present equipment. It may be supplied for permanent installations or in portable units.

New District Office Manager Appointed

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has announced the appointment of W. R. Judson as Manager of the Salt Lake City District Office, located in the Kearns Building, Salt Lake City, Utah. Mr. Judson succeeds H. E. Weiss, who has been transferred to the company's office in Kansas City. For the past three years Mr. Judson has been Managing Director of Allis-Chalmers (France), representing the Allis-Chalmers Manufacturing Co. in Europe; and prior to that he was for thirteen years Manager of the company office at Santiago, Chile, covering Chile, Peru and Bolivia.

Knisely Receives Republic Steel Appointment

Stanley A. Knisely, of Cleveland, Ohio, has been appointed Advertising and Sales Promotion Manager of Republic Steel Corporation, with headquarters at Youngstown, Ohio. He succeeds L. S. Hamaker, who was recently made Vice-President and General Manager of the Berger Manufacturing Co., of Canton, Ohio. Knisely engaged in newspaper work in Canton, Ohio, and Cleveland, later became Advertising and Sales Promotion Manager of the National Paving Brick Association, and for the past seven years has been Director of Advertising and Research for the National Association of Flat Rolled Steel Manufacturers.

Godfrey L. Cabot Moves to New Offices

The general offices of Godfrey L. Cabot, Inc., manufacturers of carbon black, have been moved from the Old South Building to 77 Franklin Street, Boston, Mass. The move was necessitated through need of more space in which to accommodate the personnel of the office, which has been materially increased during the last few years.

A New Safety Seat for Swings

The EverWear spring-rubber safety seat for swings, manufactured by the EverWear Manufacturing Co., Springfield, Ohio, removes the hazard to life which is inherent to the wooden type of swing seat. This new safety seat embodies the necessary safety factors, including strength, flexibility, resiliency, softness and lightness. It is rigidly resistant to vertical loads, but edgeways it will spring and give under pressure or blows. The interior steel spring frame is entirely enclosed with tough, long-wearing, three-point-fabric-reinforced, tubular, soft, resilient, tire-stock rubber, and all ends and edges are soft and pliable. The clevises are reversible, making both sides of the seat available for use, which doubles the life of the seat.

THE EVERWEAR SPRING-RUBBER SAFETY SEAT FOR SWINGS

The Effect of the new EverWear No. SR-206 spring-rubber safety seat is to cushion any blow to the head or other parts of the body and thus remove the danger which heretofore has been an unavoidable feature of swing outfits.

FEATURES

GMC valve-in-head engine—94 h.p.—230 ft. lbs. torque—stellite exhaust valve seats—downdraft carburetor—oil reservoir air cleaner—roller bearing fan with dual "V" belt drive—9" frame—booster brakes—448.7 sq. in. braking area—cast nickel iron brake drums—radius rod drive—standard S. A. E. loading space—full floating spiral bevel rear axle—needle bearing universal joints—spoksteel wheels.

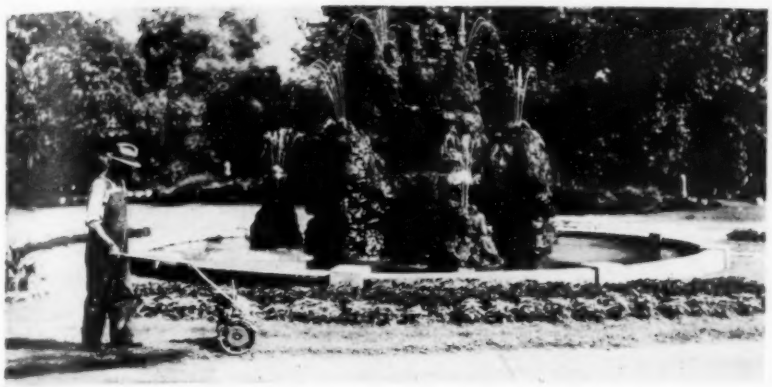
■ It's here! A brand new General Motors Truck. A big, husky 5-ton truck—priced at the lowest figure ever quoted on a GMC of this capacity. *In fact, priced $1,000 under the average price of all other leading 5-ton trucks!*

Not only in price, but in design, construction and performance, this new GMC worker is just what thousands of owners will find exactly fitted for the job of hauling 5-ton loads more profitably.

Any GMC dealer will gladly tell you more about this latest addition to the modern, complete line of GMC quality trucks. Or an interesting descriptive booklet will be mailed upon request.

GENERAL MOTORS TRUCKS AND TRAILERS

GENERAL MOTORS TRUCK COMPANY — Time Payments Available Through Our Own Y. M. A. C. — PONTIAC, MICHIGAN



OPERATING THE LAWN-BOY MOWER IN CLOSE QUARTERS

A One-Hand Power Lawn Mower

The Lawn-Boy one-hand power mower, made by the Outboard Motors Corporation, Milwaukee, Wis., provides for better and easier lawn mowing. Hand-mower trimming is entirely done away with because the Lawn-Boy cuts 6 inches closer to walls, trees and hedges. This advantage is secured by locating the reel and cutter bar farther forward. This also means that taller grass can be mowed more satisfactorily because the reel catches it in an upright position before the mower frame can bat it down. In the troughs and on the crests of terraces, uphill or downgrade, this mower turns out a smooth, uniform job.

Although not much larger than the average hand mower, the Lawn-Boy cuts nearly 18-inch strips with speed and can be steered in circles, to follow odd contours and start and stop it with one hand. The muffled, especially designed air-cooled motor does all the pushing and turns the 18-inch cutting blades. It cuts tough, long grass, and four different cutting heights may be secured by means of a simple wheel adjustment. It weighs only 95 pounds and has extra-wide wheels that do not pack the soil. This mower has proved a favorite among large estate owners, institutions, schools and universities, etc.

A New Altitude Controller for Water Works and Sewage Systems

A new instrument known as the Foxboro Rotax controller, a new positive-operating type of control for pressure, temperature, flow, altitude and liquid level for use in water works and sewage system has been developed by The Foxboro Co., Foxboro, Mass. There are three types of Rotax controllers available: the 6-inch indicating controller; the 10-inch indicating time controller; and the 10-inch recorder controller.

Rotax permits the use of electricity as the operating medium and thus greatly widens the availability of control. The assembly is built around the patented pivoted pen-arm movement. The commutator contact complete with contact brushes is pivoted on the same axis of rotation as the pointer or pen-arm, and the brush arm is connected to the index arm. When the outside setting arrangement is operated, the entire brush assembly swings around the common axis of rotation. The commutator discs are assembled to be rotated as a unit by the measuring system. The lower disc is the common contact, and its entire contact surface is silver. The center and top discs are insulating material with metallic segments set flush with the surface. This construction insures a smooth, free operation of the brush from the non-conducting to the metallic surface.

Western-Austin Officers Elected

Western-Austin Co., Aurora, Ill., the company formed by the consolidation of the Austin Manufacturing Co., Harvey, Ill., and the Western Wheeled Scraper Co., Aurora, Ill., on June 21 elected the following officers: C. W. Sencenbaugh, Chairman of the Board; S. F. Beatty, President; H. B. Bushnell, Vice-President; K. N. Forbes, Vice-President; F. L. Jerome, Vice-President; H. M. Kleiser, Vice-President; J. L. McNab, Secretary; and McClure Kelley, Treasurer. A district sales office under the supervision of E. J. McGinty will be maintained in Chicago at 105 West Adams Street. The Austin-Western Road Machinery Co. will continue to act as sales company for this new firm.

Reorganization of Consulting Group

Nicholas S. Hill, Jr., consulting engineer, 112 East 19th Street, New York, has announced the retirement of Stuart K. Knox and Horace H. Chase as members of his organization. Mr. Knox will enter private practice as a consulting engineer under his own name, and Mr. Chase is retiring from active practice.

Vitrified Clay Liner Plates for Concrete Sewers

Robinson salt-glazed vitrified clay liner plates made by The Robinson Clay Products Co., Akron, Ohio, have proved effective in preventing wear in the inverts of concrete sewers. These liner plates are a burned clay product made from the same vitrifying clays as sewer pipe, being formed in the same presses, and dried, burned and salt-glazed in the same manner. They thus have the same smooth surface and hard, dense body that is characteristic of vitrified clay sewer pipe. They are designed primarily for protecting the surfaces of concrete and reinforced concrete sewers exposed to the corrosive action of sewage and gases and the scouring effect of sand, gravel and other detritus. The combination of these materials, concrete and vitrified clay, provides an economical structure that utilizes the foremost characteristics and advantages of each and thus insures strength, reliability, and permanence. Salt-glazed vitrified clay withstands the tests of time, weather, and fire, as well as acids, alkalies and other chemicals.

Liner plates in sewer construction prevent disintegration of concrete due to the action of acids or other chemical wastes; protect the concrete against the action of destructive gases formed by slow-moving sewage; and withstand the scouring effect of sand, gravel, and other detritus carried at high velocities. They help to prevent cement from being leached out of concrete, occupy a minimum area of the sewer cross-section, and reduce frictional resistance to the flow of sewage.

VIEW OF THE NEW HEADQUARTERS OF THE WESTERN-AUSTIN CO. AND THE AUSTIN-WESTERN ROAD MACHINERY CO. AT AURORA, ILL.

VETERAN *BRICK* PAVEMENT WHICH NEEDED NO MAINTENANCE FOR 40 YEARS IS—

"TURNED" FOR NEW SURFACE

1894 1895 1896 1897 1898 1899 1900
1901 1902 1903 1904 1905 1906 1907
1908 1909
1910 1911
1912 1913
1914 1915
1916 1917
1918 1919
1920 1921
1922 1923
1924 1925
1926 1927
1928 1929
1930 1931
1932 1933 1934

DATA ON PERRY STREET, MONTGOMERY, ALABAMA

First Paved: **1894.**
Length of Service: **40 years.**
Maintenance: **Nil to practically none.**
Relaid: **1934.** ***Labor:*** **CWA.**
Salvage: **75% of original brick.**
Authority: **Roy S. Garrett, Assistant City Engineer, Montgomery, Ala.**
Data Published by: **National Paving Brick Association, Washington, D.C.**

Only when a *brick* surface is used can you get 40 years of maintenance-free use from a pavement . . . and still have the making of a fine new pavement from the salvage of the old one.

BRICK SERVES BETTER—COSTS LESS

Do you mention THE AMERICAN CITY? Please do.

Vertical Centrifugal Pumps for Economical Pumping of Water

Layne vertical centrifugal pumps, made by Layne & Bowler, Memphis, Tenn., can be used with a pumping water level many hundred feet underground. They consist of three major parts, a pump head at the surface of the ground, bowls or stages under water in the well, and a discharge column connecting the head with the bowls. The entire assembly is supported at the surface, and its own weight keeps it in perfect alignment. There are no valves or reciprocating parts to wear out and break.

Pumping from deep wells is the principal use of the Layne pump because it can handle any quantity of water, large or small, from depths far too great for an ordinary suction pump and more efficiently and economically than the air-lift method. It is placed down in the well where the bowls are submerged below the pumping water level, and a 20-foot length of suction pipe is added below them to allow for considerable lowering of this level. The pump will discharge water at the surface, raise it to an elevated tank, or force it directly into water mains against pressure.

These pumps can be used advantageously in pumping from a river by placing them on an elevated substructure over the river or in a drilled well on the river's bank.

Layne pumps are built to handle 50 to 5,000 gallons per minute from depth of 20 to 500 feet. They can be placed in any well of 6-inch diameter or larger, and the number of bowls or stages varies according to the lift.

Layne shutter screens for gravel wall wells are made of Armco iron for successful operation and long life, and also from bronze, stainless steel and other alloys to meet special conditions.

The accompanying illustration shows one of the many municipal installations of Layne pumps.

Cramer Made Chicago District Manager

The McIntosh & Seymour Corporation, Auburn, N. Y., has announced the appointment of K. F. Cramer as its District Manager for the Chicago district. After graduating from Syracuse University, Mr. Cramer was affiliated for a short time with the Worthington Pump and Machinery Corporation, at Buffalo, and then joined the McIntosh & Seymour organization. He has had several years of experience in the engineering and sales departments. His headquarters will be at 909 McCormick Building, Chicago, and he will be in charge of sales work in Wisconsin, Michigan, Illinois, Indiana, Ohio, and Kentucky.

New Lubricated Plug Valves

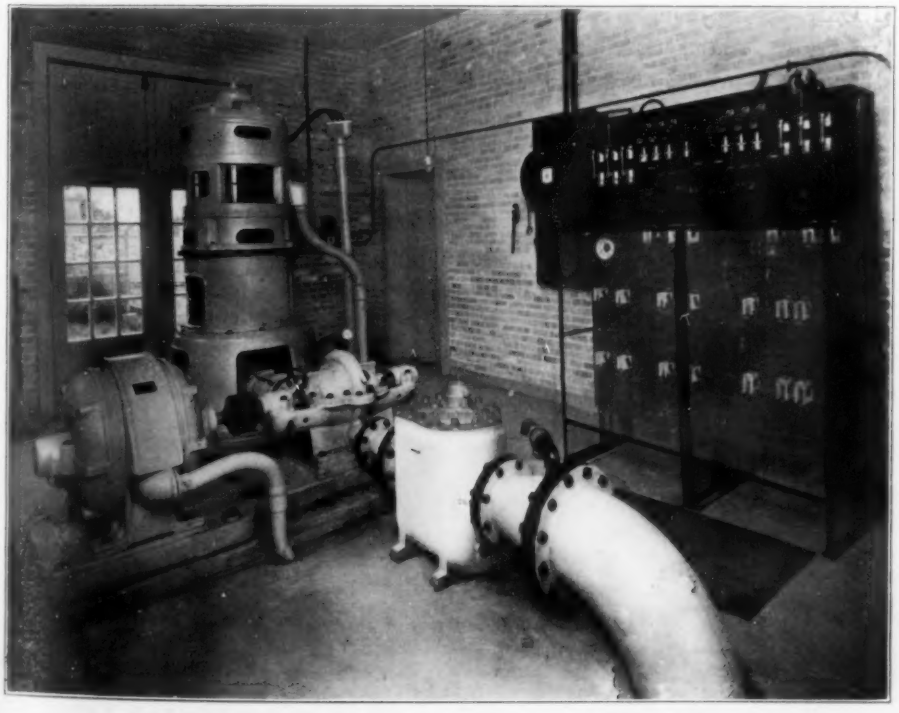
EMCO-Nordstrom valves, made by the Merco Nordstrom Valve Co., a subsidiary of the Pittsburgh Equitable Meter Co., Pittsburgh, Pa., are lubricated plug valves having standard gate-valve face-to-face dimensions. This line of valves is available in both semi-steel and cast-steel in sizes from 2-inch to 12-inch inclusive. These valves are plug cock type and embody all the patented Nordstrom plug lifting features that make operation easy and positive at all times. Lubricated plug cock type valves possess natural advantages for withstanding corrosion and erosion. When fully open, no part of the ground seat of the valve is exposed to the corrosive or erosive action of the line fluid.

These valves are non-sticking and are always easy to turn because the lubricant exerts an upward pressure on the base of the plug which releases the plug instantly, should it ever be tight. A turn of the lubricant screw performs the functions of unseating, greasing and sealing the valve.

THE EMCO-NORDSTROM LUBRICATED PLUG VALVE

Speiser Joins Worcester Lawn Mower Co.

S. D. Loud, President, Worcester Lawn Mower Co., Worcester, Mass., has announced that Ralph W. Speiser, formerly of the Coldwell Lawn Mower Co., has acquired an interest in the Worcester Lawn Mower Co., and will take charge of sales. Mr. Speiser has been widely and favorably known in the lawn mower industry for many years.



LAYNE PUMP INSTALLATION FOR THE CITY OF GREEN BAY, WIS.

GUARDIANS *of the Public Safety*

During 18 months of the World War 50,510 members of the A.E.F. were killed or fatally injured. During 18 months ending Dec. 31, 1931, 53,650 people lost their lives in traffic accidents in the United States . . . Good street lighting reduces *accidents* . . . speeds up traffic . . . makes good police work easier. It pays . . . in terms of public safety. Graybar's experienced lighting specialists can help you with technical problems . . . show you how to make savings. Write us for information.

Everywhere traffic problems grow daily more complex. Selection of traffic signals requires careful thought and wise planning . . . Automatic control requires adequate control flexibility. Graybar can show you the latest developments in the new science of traffic control. Graybar brings to you, too, a complete selection of all types of traffic signals, mountings, and controls. Also anything and everything else electrical you may need. Ask our salesman about it.

The long arm of the law strikes quickly when it's equipped with Police Radio. Officers in radio-equipped patrol cars often reach the scene of crime in time to catch the criminals on the spot. Effectiveness of police work is enormously increased . . . Western Electric Police Radio equipment —distributed by Graybar—is dependable equipment, worthy of your department. It is in use in more than 30 U. S. cities. Write us for more complete details.

Distributed by GraybaR

GraybaR Electric Company

OFFICES IN 74 PRINCIPAL CITIES: EXECUTIVE OFFICES, GRAYBAR BUILDING, NEW YORK, N. Y.

Mention THE AMERICAN CITY—it helps.

Outdoor Lighting

A Section of *The American City*
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Business Districts Then and Now

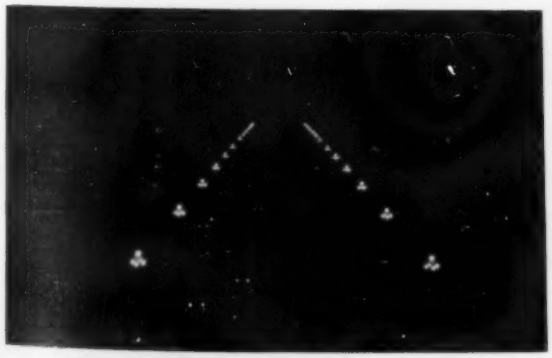
LIGHTS of the first White Way consisted of clusters of, say, four 60-watt vacuum-type lamps topped by a 100-watt, and recent studies at the General Electric Institute at Nela Park, Cleveland, show these clusters to have been about the only thoroughly visible objects along the street. Yet this method was extremely popular in 1905-15. It was expensive, inefficient and difficult to maintain; but it seemed the fulfilment of a happy age, when people danced on sidewalks and blew fish horns on New Year's Eve and Election Night. The faults of the system were corrected in 1915 by the advent of the gas-filled lamp, when everything became as plain as day and the fish horns were rarely heard. Big cities now use 750- to 2,000-watt lamps; middle-sized cities, 500-watt; smaller cities, 300-watt. The illustrations are to show conditions when mother was a girl and now.

Sodium and Mercury-Vapor Lamps

The evolution of street lighting is of course not confined to business and pleasure districts, or to the wattage of the lamp, or to the design of the lighting unit. There are changes in the light itself. The leader has long been the tungsten-filament lamp; but there is a great deal of interest right now in the newly developed sodium-vapor lamp, with its high luminous output. The most recent installation went into operation July 11, and consisted of 12 units of 10,000 lumens on Jerome Ave., New York, from 233rd Street toward the city line. Other installations that are being placed at this writing (July 18), are at Syracuse, Pittsburgh, Rochester, Minn., and Three Rivers, Que. Another very interesting lamp, of which more is likely to be heard, is the high-intensity mercury-vapor lamp the rating of which is 14,000 lumens (35 per watt and 425 watts over-all), and it operates on 220 volts a-c in series with a reactor. It is 13¼ inches long by 2 inches in diameter, with a 6 3/16-inch length of light source; its average lifetime is 1,500 hours, and it operates only in a vertical position.

Methods, combinations and results are frequently studied in miniature. One of the Nela Park models is of a 30-foot highway 2,000 feet long, with concrete curbs, 8-foot green shoulders, and your choice of surface, concrete, asphalt, or wet black. The lighting units are adjustable for distance from curb, height to 40 feet, and spacing 125 to 500 feet one-side or staggered. Various sets of conditions can be simulated and studied. As the scale is one-eighth, the model is 240 feet long. The luminaire housings are constructed so that they may be shifted instantly from the tungsten lamps to the gaseous-conductor source or vice versa. The development of these new light sources has progressed rapidly, and this new model highway provides a link between actual field practice and the fundamental studies of visual acuity, pupil size, color and brightness, contrast, glare, that have been under way for some time in the Nela Park Lighting Research Laboratory.

NEW MERCURY LAMP



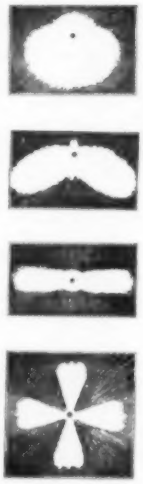
A GAY NIGHT IN 1905-1915
Clusters of four 60-watt vacuum-type lamps mounted 12-14 feet spaced 50 feet and opposite

BUSINESS AS USUAL, 1934
Two 2,000-watt lamps mounted at 22-28 feet, spaced 125 feet and opposite

HOLOPHANE REFRACTORS

Shape the Light to the Street

HOLOPHANE gives more light at the same cost—or the same amount of light at a saving



(1) For wide streets—units at curb—closely spaced.

(2) For wider spacing—a longer reach of light.

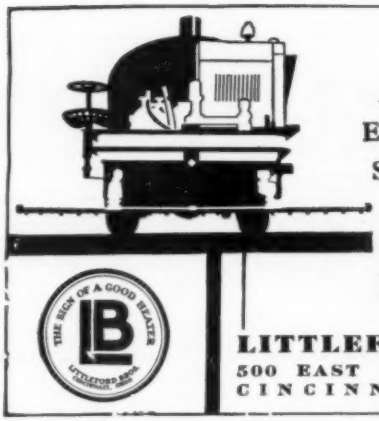
(3) For highways—a long, narrow ribbon of light.

(4) For intersections—a separate beam for each roadway.

Holophane Trade Mark

For engineering service address Holophane Co., Inc., 342 Madison Ave., New York. Offices also in Toronto. Works, Newark, Ohio.

Illumination Service Since 1898



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LITTLEFORD BROS.
500 EAST PEARL STREET
CINCINNATI, OHIO

WOOD HYDRAULIC

REPAIR TOWERS

Units such as the one illustrated here are ideal for lamp maintenance, overhead wire repairs, tunnel work, etc. Wood Hydraulic Repair Towers are outstanding for their safety, compactness and long life; they are adaptable to any size or make of truck.

Write for catalog.

Gar Wood Industries, Inc.
Hoist and Body Division
Detroit, Mich.

ILLUMINATED FOR HIGHWAY STREET AND RAILWAY APPROACH FLASHING

A New Flashing Warning Signal . . . Powerful Beam . . . Battery-Operated . . . Arresting . . . Efficient . . . Low in First Cost and Operation . . . Exceptionally Easy to Service . . .

Reflecting Button Signs, all kinds—Power-operated Neon Signals

WARNING REDFLEX SIGNAL COMPANY SIGNALS

EAST CLEVELAND, OHIO
DISTRIBUTORS WANTED

Wait until you've seen a

"HVASS"

before deciding upon a

FLUSHER!

The double unit flusher in the picture, with suction filling attachment and fire hose connection, is just one of the reliable "HVASS" line.

If it's a "HVASS," it's dependable. Select the model for your city from our illustrated bulletin.

CHAS. HVASS & CO., Inc., 508 East 19th Street, New York City

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Readers of THE AMERICAN CITY desiring to secure catalog or price lists on any sort of machinery equipment or supplies for municipal or county work are invited to state their wishes to the Catalog and Price List Department, The American City, 470 Fourth Ave., New York. One letter to us will secure you the information you desire free of all charge, and at a considerable saving of time and correspondence.

The Elements of Modern Street-Lighting Design

By H. J. CHASE
Cleveland Works, Westinghouse Electric and Manufacturing Co.

Make a Plan
Select Layout and Equipment
Series or Multiple Distribution?
Write for the Table of Modern Street-Lighting Practice

THE most difficult problem for the illuminating engineer today is not to find the equipment to accomplish the purpose of lighting the streets, but to select from the variety of material at hand a design that will most satisfactorily meet the demands of the situation.

The first step is to adopt a comprehensive street-lighting plan which embodies the classification of all the streets of the city according to traffic requirements and to architectural surroundings. There are two main types of street lighting to use, ornamental and utilitarian, and although the quality of the surroundings usually determines which type should be used on a given street, there is sometimes a choice between the two, especially where a street does not fall under a distinct classification. In formulating the plan, therefore, it is necessary to classify the streets before selecting the equipment. A table has been prepared recommending a wide range of values for each class of street. The main street or even a minor business street of a large city requires more lumens per standard and a larger and more imposing design of standard than the main street of a small village.

Quantity and Uniformity of Light

The quantity of light obtained on a given street is influenced by size of lamps, light-directive equipment, design of luminaire, mounting height and spacing of units. The most effective light-directive equipment is the prismatic refractor installed inside the luminaire and so constructed as to direct the rays of light toward and along the street in such a manner as to allow a minimum of wasted light-flux in any other direction. With this type of distribution it is possible to vary the mounting height of the light source, or the spacing, to obtain maximum uniformity of illumination on the street surface. High uniformity reduces eye strain and traffic hazards. Having determined the mounting height, the illuminating engineer, by referring to candlepower distribution curves of the luminaire, may then calculate the illumination received on the street surface for various spacings, and select the spacing that gives a good uniformity of illumination. A correctly designed refractor permits longer spacing, smaller lamps and more uniform illumination.

Mounting height, spacing of units, and the size of lamp having been determined, the next step is to select the equipment. On certain streets duplex lighting standards and combination trolley and light standards will be required, while for other streets single light standards of various heights are sufficient. There should be a single motif of design throughout the entire system. The different designs are commonly carried out in standards of Hollowspun granite, cast-iron or sheet-steel. Utilitarian lighting units are usually simpler in design, and a single type may be used throughout a greater area and with less regard for architecture than in the case of ornamental units.

Series or Multiple?

The multiple and series systems of distribution are both used extensively at present, and which to use is often determined by the system already in use. Without question the series system offers a decided advantage in outlying districts, and the 20-ampere series circuit of recent years has given considerable impetus to the use of this system. It permits the use of the larger sizes of series lamps without an intermediate current transformer, thus reducing cost and increasing simplicity of installation. Another advantage of the 20-ampere is that the voltage of the circuit is one-third that of the corresponding 6.6-ampere circuit. Street-lighting circuits, whether multiple, and energized from distribution transformers, or series, and energized from constant-current regulators, are controlled by either time switches, remote controlled switches, photo-electric cells or manual operation. The method of control depends on the locations of the circuits and personal choice.

This in brief is the procedure in preparing a comprehensive street-lighting plan. The "table of modern street-lighting practice" shows mounting heights, spacings, lumens and lamps and candlepower per standard, and the uniformity factor, for ten (10) classes of streets from White Way to blind alley. For a free copy, address THE AMERICAN CITY, 470 Fourth Avenue, New York.

Controlling Hollywood's Lamps

THE lamps of Hollywood, Calif., to the number of 10,000 in an area some 60 blocks long by 35 blocks wide, are controlled by 88 carrier-current controllers operating on the existing 115-volt secondaries. At the distribution substations Nos. 4 and 10, a motor-alternator feeds carrier current of 480 or 720 cycles or both into the station bus. This superimposed control energy travels through the feeder regulators and feeders, when it is stepped down to the 115-volt secondary circuits by the distribution transformers in essentially the same manner as the 60-cycle power voltage. Operation consists of pressing an "on" button at dusk and an "off" button at dawn.

Built and Operated to Scale

MINIATURE STREET-LIGHTING INSTALLATION AT THE GENERAL ELECTRIC RIVER WORKS AT LYNN, MASS.

The several types of standards are built in proper proportion to the buildings, and when lighted they show the exact relative intensity of illumination as in "real life." Two residential streets, similarly laid out, flank the business street

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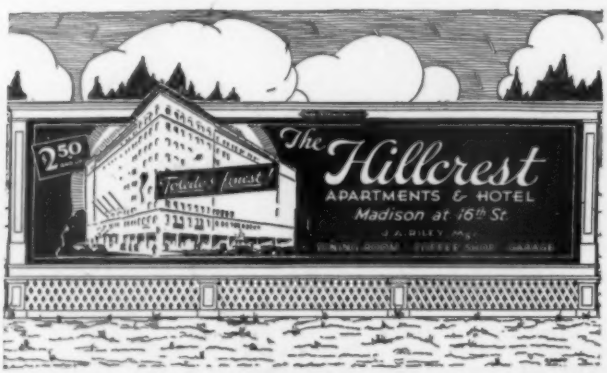

Notice For Proposal For Electric Engineering Service

The City Commission of the City of St. Augustine, Florida, acting on behalf of the City of St. Augustine, Florida, hereby calls for proposal for engineering services to be performed for the City of St. Augustine, to make surveys and reports sufficient and necessary to apprize the City Commission and its Committee making a study of the electrical situation, as to what would be best for the taxpayers and the City of St. Augustine, Florida, to do at or before the expiration of the present franchise which is owned by the Florida Power and Light Company. It is requested that a complete estimate and proper valuation be made of the property and holdings of the Florida Power and Light Company in St. Augustine, Florida, which would also include extensions or material placed within the City Limits of St. Augustine, Florida, before the City Limits were contracted; second, the amount or cost of City-owned electrical plant and distribution lines and system necessary for the City to operate; third, the amount necessary to establish and erect a transmission line from the City of Jacksonville to the City of St. Augustine, Florida, to supply electrical energy or power for the City of St. Augustine in order to distribute through a distribution system to be owned by the City itself; fourth, there must be a complete report and such report should be made in plain, easy and understandable language so that the Committee and the City Commission would be able to ascertain and know which of the three above named propositions would be the most profitable, and the least expensive plan for the City of St. Augustine, Florida, to adopt in reference to the building and erecting of a municipal system by the City itself; fifth, the report must also show how much it would cost the City per kilowatt to produce the proper electrical energy or power and the distribution costs and what profit the city could reasonably and legally make on its investment and how low a rate this City could charge its customers, taking into consideration the valuation of the plant, distribution lines, interest and depreciation and overhead; in other words, deducting all proper deductable elements, what would be the net profit on the plant per year with the same number of customers as the present plant has, to the City of St. Augustine, Florida. This report must include, out of ordinary circumstances, replacements that would have to be made of the more expensive machines or elements necessary in the production and the probable amount of future worth. The successful proposer should agree to furnish the City with all necessary data should an arbitration be opened between the City and the present owners of the franchise relative to a better contract and lower rates than are now given to said municipality. The successful proposer must agree that these estimates and reports will not only be given but also at any time during the preparations of these reports or making of these esimates or in the event that there might be negotiations with the City and the present owners, that the successful proposer will advise with and keep the City Commission informed and act with the City Commission in the event of any negotiations. The successful proposer must give a correct estimate of the costs to the City for the preparation of the proper technical and practical contracts to be drawn in the event that the City should continue with its present relations with the present company or others. The successful proposer must furnish the City with an estimate of how much it would cost for contracts, plans and specifications should the City determine to build and erect its own plant and distribution system, and also give an estimate of what it would cost to prepare plans and specifications for the building of a transmission line from Jacksonville to St. Augustine, Florida. All proposals shall be submitted on or before the *5th* day of *September*, A. D., 1934, at 3 P. M. and should be made and sealed in envelopes directed to the City of St. Augustine, Florida, c/o Eugene Masters, City Manager, City of St. Augustine, Florida. The City Commission of the City of St. Augustine reserves the right to reject any and all proposals or award the proposal to the lowest responsible competent proposer.

CITY COMMISSION
CITY OF ST. AUGUSTINE, FLORIDA

BY
CITY MANAGER

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Rochester, N. Y.

The Second Quarter-Century of Service by THE AMERICAN CITY to American Cities, Towns and Villages Begins This Month

Some of the significant advances of the last twenty-five years in the physical and administrative improvement of local governmental units throughout the United States are summarized on pages 53-56 of this issue